

Chapter 3

School resource distribution in Kazakhstan

The distribution of resources to schools is currently decided on a discretionary and incremental basis by rayons in consideration of national norms. This is in parallel with plans to introduce a new per-capita funding model, following a pilot phase, an important step towards a more efficient and equitable school funding scheme. However, the new school funding model has not been thoroughly analysed, requires further development and the original timeline for its implementation was too tight. A distinctive feature of the school network is its large geographical coverage as a result of a strong policy to ensure universal access to compulsory schooling. It is populated with a large number of small-class schools, which might not be the most cost-effective option to deliver education services in rural and remote areas. In addition, students in small-class schools tend to suffer from poorer learning environments. Regarding the teaching workforce, current student-teacher ratios indicate that there might be some oversupply of teachers in the system. The conception of teacher employment, whereby basic compensation is associated purely to the teacher's teaching load (stavka system), is a source of concern as it does not appropriately recognise the many tasks a teacher accomplishes beyond teaching and reduces his or her engagement in school activities. Another aspect reducing the professionalism of teachers is the absence of teaching standards. Also, the distribution of resources is limited in the extent to which it takes account of the specific needs of students or schools. The concept of inclusive education narrowly focuses on disabilities and more extreme socio-economic conditions and results in a relatively small number of students entitled to receive extra support. For example, there is no systematic policy to support students who are falling behind. This is in contrast with the overemphasis placed on top-performing students. Also, schools in Kazakhstan appear to be making slow progress in accommodating children with disabilities. Finally, in recent years, Kazakhstan's government undertook significant efforts to upgrade school infrastructure. This is in response to a previous chronic underinvestment in maintenance of schools, which left many buildings in need of modernisation.

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

This chapter is concerned with how resources can be effectively distributed across the school system. This includes the distribution of resources between the different levels of the administration (e.g. central, regional and local), across resource types (e.g. human resources, physical resources) and between individual schools (e.g. through funding formulae and special targeted programmes). In addition, it also discusses the distribution of school facilities (e.g. organisation of the school network), the organisation of teacher resources (e.g. number of teachers; teacher preparation), the organisation of school leadership resources (e.g. number and profile of school leaders) and resources targeted at specific student groups (e.g. special needs; programmes for disadvantaged students).

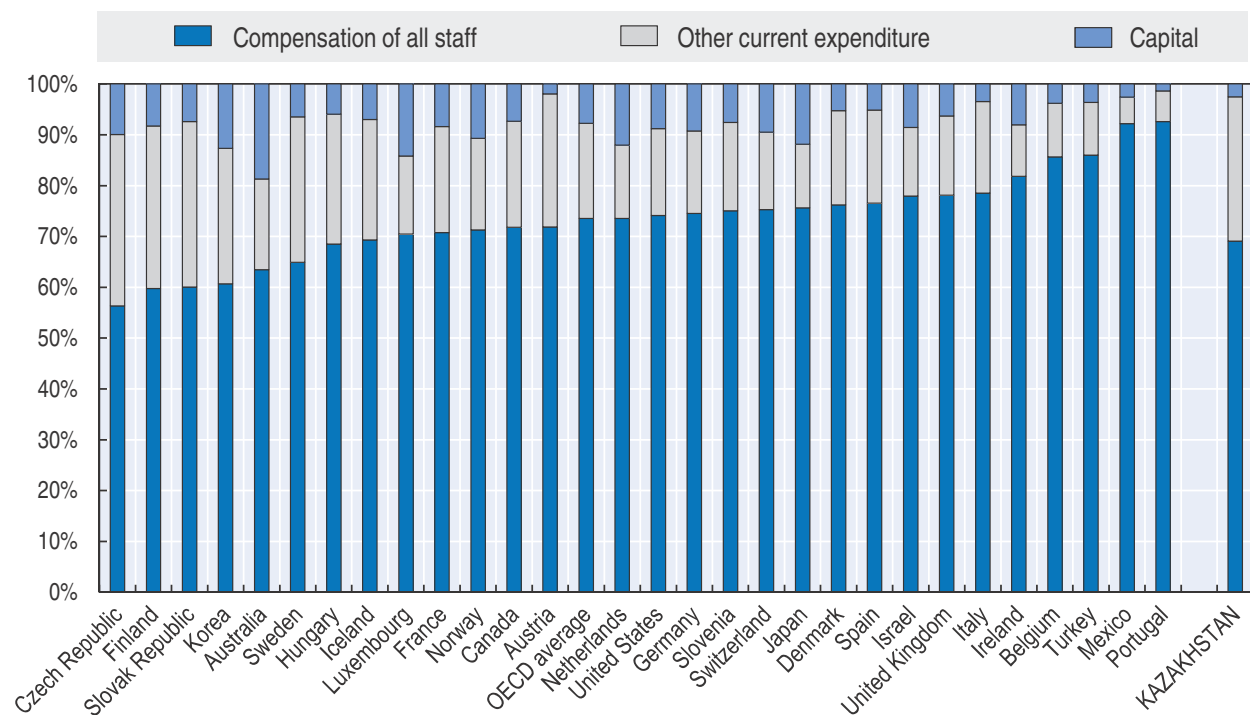
Context and features

The distribution of resources across types

The overall public and private expenditure on education infrastructure is low in Kazakhstan compared to other OECD countries. In 2011, Kazakhstan's capital expenditure, which refers to the spending on assets that last longer than one year (e.g. construction, renovation or major repair of buildings and new or replacement equipment), represented 2.5% of its primary and 3.6% of its secondary education expenditure, compared to 7.7% and 7.1%, respectively, across OECD countries (see Figure 3.1) (OECD, 2014a).

The largest share of current school operation expenditure is devoted to staff compensation given the labour-intensive nature of instruction. About 69% of the total budget for primary and lower secondary education in Kazakhstan goes to staff compensation, which compares to an average of 74% for primary and 73% for secondary education in OECD countries (see Figure 3.1). While no data are available in Kazakhstan on the percentage of the budget devoted to teachers' salaries alone, it accounts for 58% of total expenditures for primary and secondary education in OECD countries. About 28% of expenditures on primary education and 25% of expenditures on lower secondary education in Kazakhstan are allocated to other current expenditure, which compares to 19% in primary and 20% in secondary education on average in OECD countries. Other current expenditure refers to, for example, teaching materials and supplies, maintenance of school buildings, and other sub-contracted services such as student meals and rental of school facilities. These services are obtained from outside providers, unlike the services provided by the education authorities or by the educational institutions using their own personnel.

The national distribution across resource types differs from the corresponding distribution in school budgets. According to a study by UNICEF, on average, 85% of a school budget is spent on wages, 8% on non-instruction related expenses (e.g. school meals, medicines, other goods and services, communication, transport, rent, business travel, judicial decisions), 5% on communal expenses, and 1% on students at risk (UNICEF, 2012). Payroll expenses account for 79% of urban school budgets and 93% of rural ones (UNICEF, 2012). Small-class schools and primary schools in rural areas are particularly affected in

Figure 3.1. **Capital and current education expenditure in Kazakhstan and OECD countries, 2011**

Note: Data for Kazakhstan cover primary and lower secondary education while data for OECD countries cover primary and both levels of secondary education.

Sources: UNESCO Institute for Statistics database, www.uis.unesco.org/DataCentre/Pages/BrowseEducation.aspx and OECD (2014a), *Education at a Glance 2014: OECD Indicators*, <http://dx.doi.org/10.1787/eag-2014-en>.

this sense. On average, 99.6% of their budget is dedicated to salaries (Sange-SFK, 2012). However, the report notes that departures from these average values are very common and can be considerable.

Organisation of the school network

The school network of Kazakhstan presents two contrasting realities: the capacity built is insufficient in urban areas and excessive in rural ones. Urban schools tend to be overcrowded; some operate in three shifts; and quite a number experience a shortage of student places. In 2013, at least 320 schools throughout Kazakhstan experienced a shortage of student places, requiring a total of 130 000 additional places (5% of the country's total enrolment).¹ The cities of Astana and Almaty had the largest share of overcrowded schools, with at least half of their schools reporting place shortages; though other regions mainly in the country's south (such as South Kazakhstan and Mangystau) also faced space constraints (IAC, 2014).

A distinctive feature of the school network is its large geographical coverage, which expands to the entire country, as a result of a strong policy to ensure universal access to compulsory schooling. Every settlement has the right to provide education services if the minimum number of required students is met: at least 5 students for primary education (grades 1-4); 41 for basic education (grades 1-9); and 81 for all compulsory education (grades 1-11/12). Of the 7 307 public schools operating during the 2013-14 school year, 5 702 (78%) were located in rural areas. These rural schools provide education services to 44% of Kazakhstan's students and were, on average, a quarter the size of urban schools in terms

of their enrolment (197 versus 874 students enrolled). With the exception of the cities of Almaty and Astana, every region of Kazakhstan had at least 60% of its schools located in rural areas; North Kazakhstan region led the way with 90% (see Table 3.1).

Small-class schools (*malokomplektnie shkoli*) is a term used in this Review to designate schools which are typically located in remote and rural areas² and are much smaller than other schools both in terms of the average size (78 students compared to 611) and class size (8.4 students compared to 21). Small-class schools comprised half (3 639) of all schools in Kazakhstan in the school year 2013-14 but enrolled only 11% of all students (284 267) (IAC, 2014). Less than half (44%) of small-class schools provide all compulsory grades, implying that most of them only provide primary (grades 1-4) or basic education (grades 1-9). In the school year 2013-14, the number of students from more than one grade taught together in multi-grade classes represented a small proportion of small-class schools' students (22%) and classes (27%) and nationwide accounted for 6% of classes and 2% of students (IAC, 2014).

Table 3.1. **Characteristics of the school network by region, 2010**

	Share of rural schools (%)	Share of small-class schools (%)	Average class size	Student-teacher ratio	Share of buildings in emergency condition or requiring overhaul (%)	Share of students receiving free hot meals (%)	Share of students covered by transportation services (%)
North Kazakhstan	90.7	86.2	11.2	6.7	27.2	34.0	92.2
Almaty	87.8	44.6	18.8	9.0	31.8	11.0	48.2
West Kazakhstan	86.5	71.8	14.9	7.6	26.2	86.0	68.1
Kostanay	86.3	13.6	15.1	6.1	4.9	41.0	40.5
Akmola	85.3	80.0	12.4	7.7	22.7	30.0	98.3
Zhambyl	82.4	45.3	18.9	8.6	37.1	46.0	79.4
Aktobe	81.7	66.7	16.3	8.4	16.3	63.0	78.6
South Kazakhstan	81.3	26.3	21.4	9.8	38.8	7.0	42.1
Kyzylorda	81.0	75.9	21.2	9.9	47.8	25.0	56.2
Pavlodar	79.3	73.4	13.9	7.7	22.1	38.0	99.6
East Kazakhstan	78.5	66.2	16.0	8.3	19.3	40.0	86.8
Atyrau	70.9	26.1	18.3	9.4	48.5	12.0	87.8
Karaganda	62.8	57.9	17.2	9.3	15.2	61.0	100.0
Mangystau	56.7	14.7	21.9	12.6	22.5	39.0	94.9
City of Almaty	0.0	0.0	24.4	13.3	38.7	59.0	0.0
City of Astana	0.0	2.3	24.4	15.2	21.2	69.0	0.0

Source: OECD (2014b), *Reviews of National Policies for Education: Secondary Education in Kazakhstan*, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264205208-en>.

The distribution of small-class schools across the country is very uneven. It ranges from none in the biggest cities (Astana and Almaty) or less than 20% of schools (and 3% of students) in a few regions (Mangystau, Kyzylorda and South Kazakhstan) to more than 80% of all schools and 40% of all students in the regions of Akmola and North-Kazakhstan (IAC, 2014). Calculations based on statistics for the academic year 2012-13 (NCESE, 2014) suggest large differences in the average regional size of small-class schools which might imply that norms are applied differently across the country. In Atyrau, for example, the average class size of small-class and other schools is about the same and the average size of small-class schools (134 students) almost doubles the national average. By contrast, small-class schools in Kyzylorda only have 34 students on average, which more than halves the national average, and classes are on average four times smaller than in other schools. This suggests that Kyzylorda applies stricter criteria to classify a school as a small-class one.

A significant initiative to improve the access to quality education for students of small-class schools is the creation of resource centres to provide support to groups of small-class schools. Each resource centre, typically located in a regular well-resourced school, works together with a small number of small-class schools to provide opportunities for their students to benefit from better resourced quality learning environments (see Box 3.1).

Box 3.1. Resource centres to support small-class schools

Resource centres (called *опорная школа* in Russian) were first trialed in Karaganda *oblast* in a pilot project devised jointly by the Education Department of the city and that of the *oblast*. Due to interest generated by this initiative, the project was taken up by the Ministry of Education and Science and a national pilot was initiated in 2012. In 2014, there were 59 resource centres operating in Kazakhstan, and the plan was then to increase their network to 160 by the end of 2015. Resource centres have been mainly organised in large, well equipped schools, but in some cases special investment in school buildings and equipment was necessary to adapt the school to the role of resource centre.

The main aim of an individual resource centre is to support the improvement of education quality in a group of small-class schools located in the vicinity of the centre. Each centre is assigned between 3 and 4 satellite schools with which to work. For example, the current 59 resource centres provide educational services to 192 small-class schools.

The support provided to small-class schools consists in special teaching sessions organised in the centre for small-class school students from grades 8 and 9. These students, accompanied by one or two teachers from the small school, come for three sessions in a school year, each session lasting two weeks (10 school days). The first session is organised in September and includes a test of student knowledge. The last one takes place in April and also includes a test. The tests are used in two ways: they allow the assessment of student needs and the subsequent preparation of a plan of educational activities tailored to specific students; and they also allow the assessment of student progress during the school year. Between the sessions the resource centre provides remote support to small-class school students. If the small school is located close to the resource centre, students will be transported from home every morning and transported back home in the evenings, otherwise accommodation will be provided. Students are also provided with textbooks, other educational resources and meals free of charge. All these expenses as well as the salaries of teachers assigned to these classes are part of the budget of the resource centre.

The teaching sessions in the resource centre consist of classes conducted by teachers from the centre, at which a teacher from the school is also present, though in practice rarely active. Students have access not only to well-educated teachers, but also to laboratories and a library. An important part of the process is social interaction of students coming from remote, small schools with students of the resource centre. According to regulations, the teaching plan of the resource centre must take into account the plans and conditions in associated small-class schools and be approved by the consultative council of the centre. This institutional arrangement fosters cooperation between schools and allows for proper accounting of the needs of all students.

Sources: Interviews with schools and IAC (2014), *OECD Review of Policies to Improve the Effectiveness of Resource Use in Schools: Country Background Report for Kazakhstan*, www.oecd.org/edu/school/schoolresourcesreview.htm.

The current and future school funding models

The current school funding model

The distribution of resources to schools is currently decided on a discretionary basis by *rayons* in consideration of national norms and, in practice, is greatly associated to historical expenditures. School principals are responsible for the preparation of the annual school budget, with the assistance of school deputies and the school accountant. The first step of the budget formulation consists in drawing the list of personnel of the school, which is based on the number of consolidated classes. The number of classes determines the type and number of school deputies, the number of teaching hours and related tasks to be allocated, and the number and type of support staff of the school (see Annex 4.A1). The overall number of teaching hours is used to determine the number of teachers needed as well as their teaching workload, once up to nine teaching hours have been allocated to each school leader. The second step consists in calculating the exact salary of each staff member with strict observance of the current legislation (e.g. category, qualification, experience) and their workload. The final step consists in the calculation of the remaining operating costs (e.g. heating, electricity) to reflect changes in input prices and other structural conditions (e.g. maintenance, facilities, equipment). Schools might also request additional resources for a variety of purposes (e.g. repair damages in school equipment, purchase missing textbooks) to local authorities in an ad hoc basis throughout the year.

Schools submit their budget proposal to the *rayon*. The number of staff and their compensation is negotiated and approved before the start of the school year (September), while the overall school budget follows the fiscal year (January to December) and is approved later in the year once the budget of the *rayon* has been determined (see Chapter 2). The education department of *rayons* checks the adherence of the proposed staffing to national norms whilst the financial department reviews the overall financial implications. Once the budget of the *rayon* is established, local educational and financial authorities have some discretion to distribute the remaining budget, which is the difference between the sum of the minimum budget of schools (i.e. staff costs and other essential operating costs) and the budgeted school expenditures of the *rayon*. Some of the remaining budget might be allocated to schools before the approval of their budget or throughout the year to cover unexpected expenses or ad hoc requests.

The review team was informed in the local authorities and schools it visited that, in practice, school budgets are largely based on historical expenditures adjusted by inflation, and that schools have little bargaining power. School budget proposals tend to be adjusted downwards and schools have to negotiate individually for increases to cover unexpected expenses or extraordinary requests.

The future school funding model

The envisaged future school funding model combines a per student funding formula with incremental costs. Although the work on the new funding model was initiated in 2005, the allocation formula was only legislated in 2013, the pilot began in 2014 and roll-out was originally planned for 2015.³ Officials interviewed during the Review visit indicated that the new model is, in part, purported to reduce staff costs and provide some funds for school development, in addition to providing a more transparent distribution of the funds. The new funding model has been piloted in 50 schools in 4 *oblasts* (Almaty, Aktobe, East-Kazakhstan and South-Kazakhstan) since September 2013 and in 13 other

schools of Akmola oblast since January 2014 (IAC, 2014). The pilot is managed and monitored by the Financial Center, a subordinated institution of the Ministry. The allocation formula has been stipulated in legislation, information and guidance have been provided to local authorities and booklets have been prepared and distributed to school leaders to inform them about the changes. Once introduced, the new model will be applied to all schools (i.e. primary, lower and upper secondary) with the exception of small-class schools and specialised schools (e.g. correctional, advanced curricula, NIS). The new funding scheme has two main components:

- *Educational process* includes expenses covered by the central government: salary costs and related contributions, instructional materials (e.g. textbooks, instructional packages), and performance bonuses for staff. It is financed through a per student formula and the money is transferred to schools via the respective oblast and rayon. Annex 3.A1 provides further detail about the formula that will be used to allocate funds related to the educational process.
- *Educational environment* includes the remaining expenditures: utilities, communication services, maintenance costs, minor repairs, student meals and other support, transportation, financial services and other required expenses. It is financed by local authorities on the basis of actual needs of schools, conditions and opportunities, and with observance of national norms. School heating costs, for instance, might vary significantly from school to school depending on the type of fuel used, weather, and conditions of the school building and facilities.

To support the implementation of the new funding model, other relevant changes have been introduced in schools such as the creation of Boards of Trustees and the modification of the legal status of schools from a *funded* enterprise to a *communal* one. The newly established Boards of Trustees are typically chaired by school principals and have four other members: a representative of the rayon or city, a representative of parents, and social partners, sponsors or local business leaders. The main purposes of the Boards are to contribute to the development of schools, oversee their finances, and distribute financial rewards to the best teachers on the basis of central guidelines (see Chapter 2). The new legal status of schools will enable them to change their accounting system and offer additional fee-based services.

The teaching workforce

Profile of the teaching workforce

In the 2012-13 school year, 292 064 teachers worked in school education, 63% of whom were based in rural areas. Between 2008-09 and 2012-13, the size of the teaching workforce grew 9.1% (see Table 3.2). A major feature is that the teaching profession is highly feminised: the proportion of females in 2012-13 reached 88% and 76% in urban and rural schools, respectively. This is considerably above the 2012 OECD average: 82%, 67% and 59% in primary, lower secondary and general upper secondary education, respectively (OECD, 2014a).

Qualifications of Kazakh teachers have improved in recent years but, in 2012-13, about 12% of teachers did not have a higher education degree, a circumstance more often found in rural schools (about 14%) than in urban schools (about 9%) (see Table 3.2). In primary education, for the same school year, about 25% of teachers did not have a higher education degree (NCESE, 2013a). This proportion varies considerably across regions and is above 30%

in Aktobe, West Kazakhstan, Karaganda, Mangystau, Pavlodar and North Kazakhstan (NCESE, 2013a). As a comparison, the average proportion of teachers with no higher education qualification in education systems participating in the 2013 cycle of the OECD's Teaching and Learning International Survey (TALIS) was 2.3% (OECD, 2014c).

Over a third of teachers (34.4%) had over 20 years of experience in 2012-13, an increase from the 30.7% of 2008-09 (see Table 3.2). This might reflect some ageing of the teaching profession. However, the teaching workforce remains younger than the average in the OECD area. In 2011, the proportion of teachers aged between 20 and 30 and aged 51 and over was 23.9% and 21.0%, respectively (OECD, 2014c). In comparison, for the same year in the OECD area, the proportion of teachers below 30 was 13.0%, 11.3% and 9.1% for primary, lower secondary and upper secondary education, respectively, while the proportion of teachers aged 50 and above, was 30.6%, 33.9% and 37.4% for the same education levels (OECD, 2013d).

Table 3.2. **Teachers in Kazakhstan: number, level of education and years of experience, 2008-09 and 2012-13**

	2012-13			2008-09		
	Total	Urban	Rural	Total	Urban	Rural
Number of teachers	292 064	108 202 (37.0%)	183 862 (63.0%)	267 736	96 882 (36.2%)	170 854 (63.8%)
Level of education						
Higher education (%)	87.9	90.7	86.2	85.2	90.0	82.5
Incomplete higher education (%)	0.6	0.3	0.8	1.4	0.9	1.7
Secondary vocational education (%)	11.3	8.9	12.7	12.9	8.9	15.2
General secondary education (%)	0.2	0.1	0.2	0.5	0.1	0.7
Years of experience						
Under 3 years (%)	12.8	12.4	13.1	13.2	11.5	14.2
3 to 8 years (%)	19.3	17.8	20.2	18.6	16.4	19.8
9 to 16 years (%)	20.9	20.7	21.1	22.8	24.6	21.8
17 to 20 years (%)	12.6	13.3	12.1	14.6	14.9	14.5
Over 20 years (%)	34.4	35.9	33.5	30.7	32.7	29.6

Source: IAC (2014), *OECD Review of Policies to Improve the Effectiveness of Resource Use in Schools: Country Background Report for Kazakhstan*, www.oecd.org/edu/school/schoolresourcesreview.htm.

Initial preparation

Initial preparation of teachers involves the completion of a teacher education degree. Primary education teachers should have completed a teacher education programme either as part of vocational upper secondary (4-year programme after completion of grade 9) or post-secondary education (3-year programme after completion of grade 11) or in a higher education institution (4-year Bachelor's programme). In contrast, aspiring lower or upper secondary teachers are required to complete a 4-year teacher education programme (Bachelor's degree or higher) at the higher education level.

In 2013, 144 447 individuals were attending initial teacher education programmes at higher education level, 61% in public institutions and 23% in a government-sponsored place (IAC, 2014). Admission to these programmes is based on the Unified National Test (UNT) used for entry into higher education. However, as of 2015, a new "Creative Examination" will be required to enter teacher education programmes at the higher

education level. The objective is to assess the aptitude of the candidates for the teaching profession, including their readiness and motivation. Initial teacher education is also offered at 86 of the 139 institutions of higher education in the country. Government-sponsored places are offered in 39 of the 86 institutions offering initial teacher education while attendance in the remaining institutions is fully based on the payment of fees. Teacher education is also offered at the Master's level, with an attendance of 4 458 students in 2012-13 (IAC, 2014).

Many teaching specialisations exist within teacher education for primary and secondary education. Seven specialisations are offered for primary teaching focussed on: general primary; computer sciences; foreign languages; Kazakh language; Russian language; “self-knowing”; and mathematics. These are concurrent programmes whereby subject-matter knowledge and pedagogical skills are acquired simultaneously. Initial teacher education programmes for lower and upper secondary are organised in 23 regulated teaching specialisations (e.g. Kazakh or Russian language and literature; Physics; History; Pedagogy and Methodology of primary education; Kazakh language and literature in schools with language of instruction other than Kazakh; two Foreign Languages). In 2013-14, the specialisations benefiting from the greatest number of government-sponsored places were physical education, vocational training, Kazakh language and literature, mathematics and computer sciences (IAC, 2014). Programmes offered can be concurrent or consecutive, which means that pedagogical skills can be acquired simultaneously or after subject-matter knowledge. The typical programme at the higher education level involves some practical training at schools (corresponding to at least 16% of the programme credits; OECD, 2014b), state examinations in the specialisation taken and a thesis.

Recruitment into teaching

The main requirement to apply for a job as a teacher is to hold a teaching degree for the relevant level of education and subject specialisation. Teachers are hired into schools through an open recruitment procedure led by the school principal. Schools have autonomy in teacher appointment and allocation of teaching duties. However, schools need to follow regulations regarding teacher positions, job descriptions, required standard qualifications and procedures for job placement. Information about job vacancies is supposed to be submitted monthly by principals to employment centres of *rayons* and cities. This information may also be published in newspapers, the concerned school's website and in official websites of *rayons* and cities. Teachers apply directly to schools and the hiring procedure typically involves interviews at the school with a panel composed of the school management and selected teachers from the school.

Kazakhstan has introduced some incentives for teachers to work in rural schools. These include a 25% supplement to the basic salary, compensation to cover utility bills (e.g. heating), additional social support (e.g. settlement allowance, housing allowance) and cattle food. However, the provision of these incentives is at the discretion of local education authorities. In addition, a scholarship programme to attend initial teacher education targeted at candidates from rural areas requires recipients to teach at least 3 years in rural areas following graduation. Along the same lines, the programme “To the Village After Graduation” is targeted at higher education graduates (including teacher education graduates) who work in a village for at least 5 years. These initiatives are part of broader policies to foster regional development in the country. However, it should be noted that according to regulations, teachers in classes with less than 15 students (as is the case

in many rural schools) are entitled to only 50% of some common salary supplements for additional tasks (e.g. for correcting homework, for managing a class; see below) (OECD, 2014b).

Workload and use of teachers' time

In Kazakhstan, teachers are employed under a weekly teaching load system (*Stavka* system) whereby their basic compensation is purely associated with their teaching load. Activities considered as included in this compensation are lesson preparation, communication with parents and participation in conferences and seminars. Other activities are compensated separately. These include marking student notebooks and written work, management of pedagogical/methodological associations, classroom management, mentoring other teachers, laboratory supervision for subject disciplines, in-depth teaching of a subject, working with special needs students and taking on additional hours as a substitute teacher for absent teachers. Teachers are not expected to stay on the school premises beyond their teaching time. This is in clear contrast to employment under a workload system, more typical of OECD countries, whereby teachers work a specified number of hours per week (e.g. 40 hours), a proportion of which are supposed to involve teaching. The remainder of the time is used for preparation of lessons, substitute teaching for absent teachers, assisting students with learning difficulties, meeting with parents and doing administrative work. It is also typically expected that the teacher stays at the school beyond teaching hours (see UNICEF, 2011, for a more detailed explanation of the *Stavka* system). Teachers in general school education in Kazakhstan benefit from 56 days of paid annual leave.

The *Stavka* system is extremely flexible. A *Stavka* unit is defined as 18 hours of teaching a week and teachers are typically employed from 0.25 of a *Stavka* to 1.5 *Stavkas*, or in special circumstances (e.g. teacher shortage), for 2 *Stavkas*. No minimum teaching load is stipulated while regulations specify a maximum load of 1.5 *Stavkas*. One implication of the system is that one teaching load (a *Stavka* unit) involves a small base salary, which provides the incentive for teachers to take on additional teaching hours and/or take on additional jobs in or outside of school.

Career structure

Teachers in Kazakhstan are considered civil servants. There is a clearly established career structure for teachers associated with a teacher certification process known as teacher attestation (see Chapter 4). Within teaching, four main steps exist: young specialist (or No Category), 2nd Category, 1st Category and Highest Category. While the average proportion of teachers in the first (31%) and second (30%) category was similar across *oblasts* in 2011, the cities of Almaty and Astana had a much larger proportion (29%) of teachers in the highest category than on average across the country (15%) (OECD, 2014b). Moreover, four *oblasts* (Aktobe, Kostanai, Kyzylorda and Mangystau) had a slightly higher proportion of teachers with no category (30% compared to 25% country-wide) (see Table 3.A3.1 in Annex 3.A3). There are also marked differences in the distribution of teachers by category between urban and rural areas (see Table 3.A3.1 in Annex 3.A3). Three further steps involve management responsibilities: Chief of Methodological Office, Deputy Principal and School Principal. New teachers are placed for three years in an initial step as *Young Specialist/No Category* and move up a category through the successful completion of a

teacher attestation process (see Chapter 4). However, a new teacher can apply for admission into the 2nd Category following one year of employment, provided he or she has a good track record.

Upon entry into the school, teachers sign a one-year contract. Following that, typically, the next contract is open-ended with the possibility of termination by either the teacher or the school (at the discretion of the school principal). There is no probationary period for beginning teachers (i.e. teachers employed for the first time in the school system). At the discretion of school management, a probationary period can only be established for newly-hired teachers with previous teaching experience. Mentoring of beginning teachers is not regulated at the national level but is typically organised at the school's discretion. Mentoring programmes might involve the development of a collaborative development plan with the mentor, classroom observation by the mentor followed by feedback, reports on the mentee's progress and the promotion of self-reflection and self-evaluation skills of the mentee. However, there is no information available on the extent to which this approach is implemented across schools in Kazakhstan (OECD, 2014b). Self-reported data collected in the principal's questionnaire of PISA 2012 suggests that mentoring programmes are widespread in Kazakhstan: about 97% of students are in schools whose principal reported that their schools have a teacher mentoring scheme, compared to 72% on average in OECD countries (OECD, 2013a).

Compensation

Teachers are paid according to the salary scale defined for civil servants. Teachers' compensation includes their basic salary, career development-related compensation, compensation for additional tasks, and special allowances.

The basic salary of a teacher results from a base salary which is multiplied by a given coefficient which depends on the teacher's civil service category (associated with teacher qualifications) and years of experience. School teachers with a higher education qualification are placed in category G-9 of the civil service while teachers with a VET qualification at secondary or post-secondary level are placed in category G-11. Table 3.3 shows the 2011-12 base salary together with the coefficients used to compute the basic salary for a number of relevant civil service categories.

Table 3.3. **Structure of salaries of civil servants, 2011-12**

Salary category (G-1 to G-14)	Function	Base salary – Tenge (KZT)	Coefficients			
			Years of experience			
			0-1	7-9	17-20	> 20
G-1	Top of civil service	17 697	4.29	4.76	5.10	5.15
G-4	School principals		3.41	3.77	4.04	4.08
G-5	Deputy School Principals		3.17	3.51	3.76	3.80
G-7	Teachers in higher education and post-secondary VET institutions		2.80	3.11	3.33	3.35
G-9	School teachers with a higher education qualification		2.40	2.63	2.83	2.88
G-11	School teachers with a VET qualification at secondary or post-secondary level		2.02	2.21	2.38	2.42

Source: IAC (2014), *OECD Review of Policies to Improve the Effectiveness of Resource Use in Schools: Country Background Report for Kazakhstan*, www.oecd.org/edu/school/schoolresourcesreview.htm.

In addition, teachers receive career development-related extra compensation. This relates to extra qualifications, reaching the three top categories of the career structure and completion of selected professional development activities (namely new generation professional development developed by the NIS network). The extra compensation is depicted in Table 3.4.

Table 3.4. Extra teacher compensation for extra qualifications, career advancement and selected professional development

Basis for extra compensation		Extra compensation
Academic degree	Candidate of Science	1 additional national minimum wage
	PhD	2 additional national minimum wages
Career category	G9 – Highest	100% of base salary (before coefficient is applied)
	G9 – First	50% of base salary
	G9 – Second	30% of base salary
	G11 – Highest	90% of base salary
	G11 – First	45% of base salary
	G11 – Second	30% of base salary
Professional Development developed by NIS network	NIS training attestation: level 3 (basic)	30% of basic salary (after coefficient is applied)
	NIS training attestation: level 2 (main)	70% of basic salary
	NIS training attestation: level 1 (higher)	100% of basic salary

Source: IAC (2014), *OECD Review of Policies to Improve the Effectiveness of Resource Use in Schools: Country Background Report for Kazakhstan*, www.oecd.org/edu/school/schoolresourcesreview.htm.

As explained earlier, teachers also receive compensation for additional tasks such as marking student homework, classroom management and advanced subject teaching. Teachers also receive special allowances as with compensation for working in challenging circumstances (e.g. rural areas, high radiation risk areas).

Finally, teachers may also receive ad hoc bonuses for “successful teaching”. Teacher bonuses are provided at the discretion of local education authorities (*rayon*, city or *oblast* level) and are typically associated with student results at the UNT or at national and international Olympiads. These bonuses are often provided in the context of “Best Teacher” competitions at the *rayon*, city and *oblast* levels.

The leadership of schools

In the school year 2012-13, there were 6 641 school principals and 17 998 school deputies in Kazakhstan. The number and type of school deputies is regulated and depends on the size of the school. About 45% of schools had a principal and two or three deputies.⁴ Around three out of four school principals (4 875, 73%) led a school located in a rural area (IAC, 2014). The proportion of female school principals (54%) was considerably smaller than that of female teachers (88%) in 2012, which suggests that women had six times less chances than men to become school principals.

The application to school leadership positions is restricted to teachers. To become school leaders, candidates should have at least five years of pedagogical experience for deputy and principal positions, alongside having completed an initial teacher education degree. This means that previous leadership experience or training is not required to opt for a deputy position. In 2012-13, about 90% of school principals had the highest, first or second teaching categories, which means that they were among the most experienced teachers (see the above section on teachers for further details) (IAC, 2014). Virtually all

principals had completed at least a higher education degree and 2% of them had post-graduate qualifications (IAC, 2014).

Local authorities are responsible for the recruitment and dismissal of school principals. The appointment has been undertaken in association with competitive procedures since 2007. Vacancies are publicly announced and an ad hoc local commission is created to evaluate the applications received and interview the candidates shortlisted. The commission is composed of at least five members representing the local education authority, teacher associations (labour, methodological, school) and parents. The commission designates a candidate but final appointment is subject to the approval of the head of the *rayon's* education department. By contrast, school deputies are appointed directly by the principal among the most experienced teachers.

Most school principals are very experienced teachers before being appointed to the principalship and tend to stay on this position until the end of their careers. In 2012, more than half of principals (57%) had held leadership positions for over 10 years, 26% of them had between three and ten years, and the remaining 17% had less than 3 years of experience. The number of experienced principals is much larger than in countries participating in the TALIS 2013 survey, where only 34% of principals had more than 10 years of experience, 47% had between three and ten years, and 29% less than three years (OECD, 2014c). The extensive experience of Kazakh school principals in their positions coupled with minimum requirements to access principalship suggests that their average age is quite high. An important proportion are about to retire (6%) or have already exceeded retirement age (4%) (IAC, 2014). An ageing body of school principals is of particular concern in some *oblasts*, including Almaty, Akmola, East-Kazakhstan, Zhambyl, North-Kazakhstan, and South-Kazakhstan. The turnover rate is small, only 183 school principals (3%) had to be replaced in 2012 (IAC, 2014).

School leaders have the status of civil servants. There is no separate career structure for school leaders but a unique career stage with a single salary scale. School principals are initially appointed for one year and, unless the contract is terminated, it then becomes open-ended. Salaries are defined by the general scales for public employees (see Table 3.3). Similar to the calculation of teacher salaries, the basic salary of school leaders is the result of multiplying the base salary by a coefficient based on years of service. To increase their salaries, it is common practice to continue to teach or perform other additionally remunerated school activities up to 9 hours per week (e.g. classroom management, coordination of extra-curricular activities, teaching children with special educational needs). School leaders can also opt for allowances and housing support to work in rural areas as teachers and professionals of other public sectors. There is no system of incentives to attract high performing school leaders to challenging schools, to compensate them for their performance or to encourage their personal development. In spite of this, a scheme is in place to publicly recognise the achievements of school principals. By the school year 2012-13, 21% of school principals had received medals or merit badges from the Ministry (IAC, 2014).

Targeted policies and support to specific groups of students

Low income and at-risk children

School principals are entrusted with the responsibility of providing vulnerable students with a caring environment. Schools receive additional funding from the *rayon* labelled as Fund for Universal Compulsory Education, which must be equivalent to at least 1% of the overall budget and is purported to supporting needy or at-risk students from low

income families. It can be used to provide in-kind support (e.g. clothes, footwear, textbooks, training aids, stationery, school meals, school trips or summer camps, participation in cultural and sports events) or financial assistance. Students or their parents have to apply for these resources to the school principal.

School meals are provided free-of-charge to students who are considered disadvantaged. The following categories of disadvantage have been defined: children from families eligible to receive national targeted social assistance; children from families that have average income below the minimum subsistence level; orphans and children without parental care; and children from families that need urgent assistance due to emergency situations. Schools can also determine additional categories of disadvantage. Targeted programmes are generally more efficient than programmes that spread resources across an entire population, without regard to needs, and are used in Kazakhstan. However, targeting specific children within schools can stigmatise the recipients and, for example, the provision of free meals to only students from low-income families is one of the most visible ways of publicly identifying disadvantaged children (Bundy et al., 2009). While free meals are provided to disadvantaged students throughout Kazakhstan, five regions and the city of Almaty have decided to provide them to all their students.

Kazakhstan treats orphans as a group of children with special needs, who should be provided with special conditions as compensation for their disadvantaged background (OECD, 2014b). In 2012, the number of orphan students in schools amounted to 18 017, 9 659 in urban areas and 8 358 in rural ones. Local governments provide monthly payments to foster guardians for maintenance of an orphan(s) or children without parental care. Orphans are entitled to the abovementioned assistance programmes. There are also special education schools and boarding schools for orphans and children without parental support. Boarding schools are financed by public and charitable money and provide students with accommodation, clothes, equipment, meals, textbooks, and health services (IAC, 2014).

Out-of-school children

An area in which Kazakhstan has placed considerable efforts in recent years is in preventing school dropouts and reducing the number of out-of-school children with the flagship programmes “Road to School” and “Care.” According to national statistics, 540 children were identified as being out-of-school in 2013, and only 76 of them have repeatedly been absent for 10 days or more without a valid reason. “Road to School” mobilises multi-sectoral teams in August of each school year to raise awareness about the importance of enrolling in school and provides material assistance to students from socially disadvantaged groups; in 2013, it benefited over 300 000 children with assistance amounting to almost KZT 2 billion (IAC, 2014). About half-way through the school year, in January, “Care” engages teachers to carry out a census of households in the micro-*rayon* of their school to identify students who are out of school or have been absent for more than 10 days without a valid reason and to provide assistance to families to get the children back in school; in 2013 “Care” provided material assistance to over 158 000 disadvantaged students (i.e. uniforms, pens, pencils, notebooks, school bags). The Republican budget and international charities support targeted programmes to increase educational opportunities for disadvantaged students. A recent UNICEF report on out-of-school children in Kazakhstan indicates that there is no quantitative and analytical information on children who are missing or at-risk of missing education and outlines the limitations of the existing strategies to identify and support those students (for further information see Antonowicz, 2013).

Gifted students

There is a rapidly growing set of educational services catering to gifted students. In 2012, 3 966 schools offered advanced instruction to 815 177 students (IAC, 2014), which represent an increase of 1 958 schools and 5% of students since 2011, although identifying the total number of schools and students is not an easy task as terminology is not standardised. The Nazarbayev Intellectual Schools (NIS), which is a network of schools for gifted students created and closely monitored by the President and his Office, are among the most prestigious ones (see Box 3.2). Other public schools catering to gifted students include gymnasiums, lyceums, as well as other specialised schools. These schools typically benefit from more autonomy in terms of enrolment procedures, selection of staff, specific managerial arrangements, financing mechanisms and, more broadly, a specific policy treatment. Students who attend these schools follow more advanced curricula and have more opportunities for in-depth study of one or more specialisation subjects (i.e. mathematics, physics, biology, humanities).

Box 3.2. Nazarbayev Intellectual Schools

Nazarbayev Intellectual Schools (NIS), which are autonomous schools reporting to a Board of Trustees chaired by the President, provide an interesting comparison with schools reporting to the Ministry of Education and Science. NIS were established in 2008 to serve as laboratories for improved teaching and learning in STEM fields (Science, Technology, Engineering and Mathematics) and as “feeder schools” for Nazarbayev University. As of 2013, 9 700 students attended 14 operative schools in Astana (2), Aktobe, Atyrau, Karaganda, Kokshetau, Kyzylorda, Pavlodar, Semey, Shymkent (2), Taraz, Ust-Kamenogorsk and Uralsk. The NIS cater to about 1 108 students from rural areas in a boarding arrangement.

Admission to NIS is based on competitive examinations. As of 2013, the selection process includes tests in mathematics, languages (Kazakh, Russian and English) and the ability to study mathematics and science (quantitative reasoning and spatial thinking). The selectivity of NIS is quite high, particularly for students applying for places in classes with Kazakh language of instruction. In 2013, about 7 689 individuals applied for one of the 884 places available in Kazakh language of instruction for grade 7 and 2 864 individuals did so for one of the 884 places in Russian language of instruction, which means that the acceptance rate for those studying in Kazakh (12%) is much smaller than that of Russian (31%) (NIS Annual report, 2013). Fewer than 50% of all applicants met the requirements for a merit scholarship.

The instructional resources for NIS are comparable to those in OECD countries, with new facilities and sizeable libraries (e.g. 181 books per enrolled student in the Astana NIS) and widespread availability of such technologies as mini-TV studios (8 NIS), “interactive floors” (6 NIS), high-speed internet access in newly opened schools, interactive white boards, and equipped science laboratories. The curriculum for NIS was developed in collaboration with international partners. Teachers in NIS are competitively recruited and approximately 15% hold masters degrees or a PhD in the sciences; 17% are foreign teachers. Starting salaries for full-time teachers are KZT 120 000 (USD 656) for local teachers and USD 4 000 to USD 5 000 for international teachers. The student to teacher ratio averages 6.4 across all NIS.

Source: NIS (2013), Annual report AEO “Nazarbayev Intellectual Schools”, <http://nis.edu.kz/en/about/reports/?id=2817>.

Students with a disability

Kazakhstan provides education for children with special needs and disabilities in separate “correctional schools”, in separate or mainstream classes within mainstream schools, and in their own homes. In 2012, there were 106 correctional schools catering to 15 261 students, 388 mainstream schools had a total of 1 219 special classes attended by 8 825 students, and an unknown proportion of the 7 923 children studying at home with an individual programme or 156 educated by their family had a disability (IAC, 2014). About 90% of students in special classes were considered to have a delay in development rather than a disability (IAC, 2014).

In recent years, Kazakhstan has taken some steps towards the inclusion in mainstream schools of students with special needs and disabilities. Students with a disability have the right to attend mainstream schools if their parents choose so and the proportion of schools with facilities to accommodate them has risen from 10% in 2010 to 23% in 2013. By 2020, the government plans to have 70% of schools with inclusive facilities, 20% of schools with barrier-free access and 50% of students with a disability in mainstream schools (MESRK, 2010). Initiatives include support and facilities for various groups (e.g. those needing speech and language therapy) and updating of special education programmes, textbooks and learning packages for hearing-impaired children (IAC, 2014).

Physical resources

School infrastructure

Many school facilities date back to Soviet times. There is no coherent medium or long-term funding strategy for school physical infrastructure and overall capital expenditures represented only 2.5% of the overall budget for school education in 2011 (see Figure 3.1). In recent years, efforts have been undertaken to construct and rehabilitate schools in needy areas. The “100 schools, 100 hospitals” programme, announced by the President of Kazakhstan in 2007, has constructed 106 new schools providing more than 86 000 additional student places throughout the country. The purpose of the programme, financed largely through Republican budget targeted development transfers (TDTs), was threefold: (i) to reduce reliance on three-shift education; (ii) to reduce the number of schools in emergency condition; and (iii) to decrease the deficit of student places in schools (IAC, 2014). As a result, the number of students enrolled in schools with three shifts was cut in half between 2007 and 2011.

Chronic underinvestment in maintenance and upgrading of schools has left many buildings in need of modernisation. In the school year 2012-13, the number of schools that required a complete overhaul stood at 1 461 (20%) and 189 (2.6%) were deemed to be in an emergency condition (see Table 3.1) (IAC, 2014). In particular, rural schools are six times more likely to be housed in buildings that require emergency repairs. Three-quarters of schools in emergency condition were concentrated in only four regions: South Kazakhstan, East Kazakhstan, Kyzylorda, and Zhambyl. Half of all schools in the country only had outdoor toilets, almost all of them in rural areas. In fact, rural schools were twice as likely not to be equipped with indoor toilets (63%) as to have them (37%).

Technology, laboratories and instructional materials

Kazakhstan has placed a lot of emphasis on equipping schools with information and communication technology (ICT) and connecting schools to the internet. Under the “e-learning” programme announced in 2010, several waves of schools have been equipped

with computer hardware and software, multimedia equipment, interactive smartboards, and associated teacher training. As of 2013, 99% of all schools had access to the internet and 75% had broadband access (though only 52% in rural areas). A total of 246 000 computers are installed in schools (one for every 13 students), but one-fifth are outdated and require replacement. While the e-learning programme is being rolled out nationwide, it has so far only been implemented in 16% of all schools and vocational institutions. Because of its staggered implementation, regional discrepancies in coverage exist, even among neighbouring regions – for example, while the capital Astana had 58% coverage in 2013, the surrounding Akmola region was last in the nation at only 6% (NCESE, 2014).

Schools have also been getting progressively better equipped with science laboratories. By 2012-13, 50% schools were equipped with modern physics laboratories, 40% had biology laboratories, and 30% had chemistry laboratories (IAC, 2014). About two-thirds of the newly equipped schools are located in rural areas. The State Program for Education Development (SPED) for 2011-10 sets a target of 80% of schools being equipped with modern laboratories by 2020.

Textbooks are provided to all students free of charge and their coverage is nearly universal. According to the Law on Education (Article 6), local authorities at the *rayon* and city level are tasked with the purchase and supply of textbooks on the mandatory list of titles to all students enrolled in their public education organisations. The State Program for Education Development 2011-20 sets the target of full nationwide coverage of free-of-charge textbooks by 2015. As of 2013, 98% of students in Kazakhstan had been provided with textbooks. While some regions have achieved universal provision, others lag behind (North Kazakhstan region is last in the nation with only 90%). However, the review team came across instances where parents appear to pay out of pocket for some textbooks, according to reports of some of the schools visited, in regions where supposedly the coverage of free textbooks is about 100%. In 2008, rules for the preparation, review and publication of textbooks, teaching materials and manuals were introduced, and over one thousand textbooks were deemed non-compliant with the new standards (Singh, 2012).

Strengths

Steps have been taken to introduce a school funding formula

The envisaged new funding model is a first step towards a more efficient and equitable school funding scheme. The formula that has been proposed is the result of a long development process, which has included a piloting phase and consultations with national experts (Sange-SFK, 2012) and international ones (see, for example, UNICEF, 2012). Its final form (as piloted) is the result of the own analytical effort by the Ministry of Education and Science and its subordinated institutions, and so reflects the needs and sensitivities of Kazakh education leaders. Also, the new funding model exhibits some positive aspects. The division of education expenditures into two separate parts, to be borne by central and local authorities respectively, has also been successfully introduced in other countries to allow adaptation to local conditions and cost levels (see Annexes 3.A1 and 3.A2). Also, the formula allocates the funds to individual schools and takes full consideration of the existing regulations. The exclusion of small-class schools from the application of the formula, at least at the beginning of the pilot process, seems reasonable as funding small rural schools through a unique national allocation formula is not an easy task.

The distribution of resources to schools through a formula is more likely to lead to a more efficient and equitable allocation than other methods, including the discretionary and incremental current funding model of Kazakh schools (see Box 3.3). A per student funding scheme implies that resources are calculated for every student and that a specific formula is drawn, often in the form of a mathematical equation. A well designed funding formula can, under certain conditions, be the most efficient, equitable, stable and transparent method of funding schools (Levačić, 2008). Formula funding combines both horizontal equity – schools of the same type (for example, primary schools) are funded at the same level – and vertical equity – schools of different types (for example, general academic and vocational schools) are financed according to their differing needs. It can also provide incentives for a better use of resources.

The distribution of resources on a discretionary or incremental basis, the current method used in Kazakhstan, is rarely efficient or equitable. Schools have no incentives to reduce their expenditures or increase their efficiency. Actually, schools have incentives to run into deficits with the hope that others would absorb them and inflate their expenditures with the purview of obtaining larger allocations in further years. This practice is known as *deficit budgeting* in many post-Soviet countries. Negotiation processes reflect the priorities and relative strengths of local actors and those who can prove most convincingly that they have greatest needs. The response to perverted incentives has been to extensively regulate the allocations (e.g. employment, utilities) in order to protect schools from unilateral budget cuts and at the same time lower the expected allocation. However, in most cases, the actual application of the norms depends on the attitudes of decision-makers and thus might be applied differently. Moreover, discretionary and incremental funding models tend to be associated with low levels of budget transparency.

Formula funding offers more scope and more tools for achieving equity and efficiency, but these are by no means guaranteed. Indeed, inadequate formulas or wrongly assessed coefficients may exacerbate inefficiencies (for example, by helping to preserve small-class schools which may be consolidated), as well as inequities (for example, by providing more funds to schools or regions which historically had higher allocations). The level of equity and efficiency achieved depends, among others, on the extent to which formula funding meets the following conditions:

- Coefficients should adequately reflect different per student costs of providing education. This is not an easy task when class size varies greatly due to the existence of rural or remote schools. Difficulties also emerge in the consideration of students' and schools' needs in the formula (e.g. curriculum requirements, school equipment, students' learning pace). A balance needs to be struck between a simple formula, which might fail to capture everything, and a sophisticated formula, which might be difficult to understand and adjustment might result in unexpected and unwelcomed results.
- Budgetary discipline entails not compensating overspending of *rayons* and schools unless justified by exceptional circumstances (i.e. emergency conditions, unexpected enrolment growth). This means that they need to plan their budget in a realistic way and be careful to ensure sufficient funding is allocated to key budget categories (salaries, heating, teaching aids). At the same time, they have to limit these required expenditures and allocate funds for school development. This is very difficult, in part because it goes against the traditional mentality of always "saving" schools which ran into problems, and in part because hard budget constraints can be imposed only if there is consensus that formula-based allocation is adequate and sufficient.

Local discretion in the allocation of resources is key to enable matching in line with their needs and priorities, not hampered by excessive regulations and instructions. Without such flexibility, when national norms dictate large parts of school budgets, budget discipline may become a tool for inefficiency, because no national rules can adequately reflect all specific particularities of individual schools. However, formula funding may be difficult to implement and may not cover all schools' costs (infrastructure, staff, etc.) and requires transparency and sufficiently detailed and reliable data (Levačić, 2008). While the conditions above are not always entirely met, in general, formula funding yields more effective and equitable results than other methods.

Box 3.3. Approaches to school funding

There are three main methods to determine the annual allocation of resources that schools receive:

- *Administrative discretion*, which is based on an individual assessment of each school. Although it can serve schools' needs more accurately, it requires extensive knowledge of each school and measures to prevent misuse of resources. While it might involve the use of indicators, it differs from formula funding because the final allocation might not necessarily correspond to the calculations.
- *Incremental costs* is another type of school funding scheme, which takes into consideration the historical expenditure to calculate the allocation for the following year with minor modifications to take into account specific changes (e.g. student numbers, school facilities, input prices). Administrative discretion and incremental costs are often combined, and usually these are used in centralised systems.
- *Formula funding* relies on a mathematical formula which contains a number of variables, each of which has a coefficient attached to it to determine school budgets (Levačić, 2008). Formulas typically contain four main groups of variables: (i) basic: student number and grade level-based, (ii) needs-based, (iii) curriculum or educational programme-based, (iv) school characteristics-based. It is common to combine a per student formula funding for some expenditures and other approaches for others (e.g. incremental costs, administrative decisions); for example, capital costs are rarely included in a per student formula.

Source: OECD (2012), *Equity and Quality in Education: Supporting Disadvantaged Students and Schools*, <http://dx.doi.org/10.1787/9789264130852-en>.

A vast school network and targeted measures ensure student access to education

The almost universal access to compulsory education from primary through upper secondary education is one of the most remarkable strengths of Kazakhstan's education system. The strong official commitment towards universal schooling is reflected in the extensive school network covering most of the country's far-flung rural settlements through the right to create small-class schools and the use of boarding schools and transportation for children from villages without educational institutions. Of the roughly 2.5 million school-aged children in Kazakhstan, only 34 817 (1.4%) live in communities without a school; of these, 26 738 receive transportation to school and most of the remaining children live in boarding schools or with relatives near the schools they attend.

Kazakhstan has in place targeted programmes to ensure that all children are in school. One of the main objectives of the ambitious construction programme "100 schools, 100 hospitals" was to decrease the deficit of school places and it appropriately targeted

regions experiencing a demographic boom (see below). There are also programmes targeted at individuals who have dropped out of school or are at risk of doing so, such as the programmes “Road to School” and “Care”. Also, schools receive additional funding equivalent to 1% of their budget to be spent, among others, to financially support students who are at risk of dropping out.

There are important efforts to improve infrastructure, equipment and learning materials

Infrastructure

In recent years, Kazakhstan’s government undertook significant efforts to upgrade school infrastructure and meet demand in regions with growing student populations. Most schools were built during the Soviet construction boom of the 1960s to 1980s, and by the turn of the 21st century many showed the signs of their age. The “100 schools, 100 hospitals” programme, which was in place between 2007 and 2011, resulted in the construction of 106 schools by the central government. Many more were built or rehabilitated using local budget resources. The use of targeted development transfers from the national budget for the construction of education facilities has been particularly effective. According to a 2012 World Bank report, the thorough process and clear selection criteria led to a well-targeted distribution to the neediest regions (South Kazakhstan and the city of Astana) (World Bank, 2012). By far the largest share of the programme’s resources (27%) went to building schools in South Kazakhstan region, which accounts for one-fifth of the total school enrolment in Kazakhstan. Other regions with growing student populations or high proportions of three-shift schools (Astana, Mangystau, Kyzylorda) also received significant allocations, while regions with school infrastructure surpluses (North Kazakhstan, Karaganda) received the least. The State Programme for Education Development (SPED) 2011-20 also includes school construction as one of its key objectives, in particular by reducing the number of schools in emergency condition or operating in three shifts.

Equipment

Considerable efforts have also been made to equip most schools with laboratory and ICT equipment, textbooks, and learning materials. The e-learning programme, in particular, is an ambitious attempt to bring broadband coverage and modern information technology to schools and promote the use of ICTs in the learning process. Though still in its early stages of implementation, the programme aims to cover 90% of schools by 2020 (up from 16% in 2013) (IAC, 2014). The large-scale introduction of PCs, laptops, tablets, and interactive smartboards for use in the classroom puts Kazakhstan at the forefront of technology use in schools among countries in the region. The SPED stipulates that by 2020 at least 80% of schools should have modern laboratory equipment and 100% textbook provision. By recognising the value of interactive hands-on learning in the science fields, Kazakhstan is following international best practice to ensure adequate equipping of physics, chemistry, and biology laboratories and their alignment with national curricula.

Learning materials

Most students are provided with free textbooks at all grade levels. Textbooks are available in Kazakh-language, Russian-language and other minority languages, and norms stipulate that they are to be provided free to all students. New textbooks come with CDs and methodological guidelines for teachers. There are also reading books available for

student reading. By expanding free distribution of required textbooks to all students, the country's policymakers are aiming to make sure that all students have access to the necessary learning materials regardless of their physical location or family status. The process for designing, preparing and approving new textbooks is aimed at ensuring a high pedagogical quality. The review team was shown new primary school textbooks that appeared to be identical for Kazakh and Russian language groups.

Recruitment procedures and the existence of a career structure benefit human resource management

Teachers and school principals are hired locally through competitive procedures

As indicated earlier, in Kazakhstan, the area of greatest autonomy for schools is teacher selection and dismissal. According to PISA 2012 data, 81% of 15-year-olds attended schools whose principals reported that only principals and/or teachers have a considerable responsibility for selecting teachers for hire, against an OECD average of 49% (OECD, 2013a, Figure IV.4.2). The equivalent figure for responsibility for dismissing teachers is 76%, against an OECD average of 36% (OECD, 2013a, Figure IV.4.2). This is a strength in a system where schools are individually judged on their ability to improve student learning. A direct interaction with the applicants takes place, typically through interviews, and allows the use of a more complete set of criteria to match individual applicants' characteristics to schools' specific needs. Also, the process of open local recruitment of both teachers and school principals offers advantages to applicants since they can more directly choose the school and identify with the school's educational project. As a result, the process is more likely to build a sense of commitment of school leaders and teachers to the schools where they are recruited. Local recruitment is particularly important for schools to build the prevailing collaborative spirit observed in Kazakhstan (see Chapter 4). Woessmann (2003) used data from the Third International Mathematics and Science Study (TIMSS) to examine the relationship between different aspects of centralised and school-level decision-making and student performance. He concluded that students in schools with autonomy in deciding on the hiring of teachers performed statistically significantly better in mathematics and science, as did students in schools that could determine teacher salaries themselves.

Recruitment practices for teachers and school leaders are required to involve advertised positions. All candidates meeting the eligibility criteria can apply and a public competition is held with the objective of ensuring transparency to the process. The selection includes a diverse recruitment panel in order to elicit different views on the candidates as well as increase the objectiveness and transparency of the selection. In the case of school principals, the inclusion of key stakeholders in the panel is likely to benefit the legitimacy of the newly selected principal in the school. Interviews are performed to shortlisted candidates in order to provide them with more opportunities to show their knowledge, skills and capabilities whilst making sure that the selected candidate matches the school's specific needs.

However, it is important to note that school autonomy in teacher recruitment involves some complexity as there is the potential for an inequitable distribution of teachers (as schools with more resources and located in advantaged areas have greater potential to attract high quality teachers) and opportunities for favouritism in teacher selection by schools. The latter requires transparency in recruitment processes through making information about existing teaching openings publicly available. The review team formed

the impression that job openings for teachers are not always widely disseminated within the education system and, sometimes, not properly disseminated within *rayons* and *oblasts*. At the same time, it is important to develop school leaders' skills in personnel management and use school attestation to monitor schools' approaches to teacher recruitment. Another major limitation is the lack of selection criteria to recruit school leaders, which is particularly important to guarantee an unbiased decision when recruitment is done at the local level (OECD, 2008b). Finally, the veto power of the head of education of the local authority might hinder the recruitment of the best candidates in some cases.

A positive development is the existence of some incentives to work in rural areas where schools might have more difficulties in attracting high quality teachers and school leaders (special allowances and in-kind support). These assist rural schools in making their employment conditions more attractive and can reduce the potential inequitable distribution of teachers which may result of a more decentralised approach to teacher recruitment. However, the practice of reducing certain salary supplements for additional tasks (e.g. correcting homework; managing a class) on the basis of class size, which tends to affect more teachers in rural areas (where class size is typically smaller), is debatable in terms of the negative incentives it gives to work in rural areas.

A clear career structure recognises and rewards teacher performance

In Kazakhstan, teachers benefit from a clearly established career structure with four steps associated with a teacher certification process (teacher attestation, see Chapter 4). The existence of a career structure for the most part accomplishes two important functions: the recognition of experience and advanced teaching skills with a formal position and additional compensation; and the potential to better match teachers' skills to the roles and responsibilities needed in schools, as more experienced and accomplished teachers may be given special tasks within schools (e.g. mentoring of beginning teachers). These convey the important message that the guiding principle for career advancement is merit and have the benefit of rewarding teachers who choose to remain in the classroom.

Teachers, as they access higher categories of the career structure, are expected to have deeper levels of knowledge, demonstrate more sophisticated and effective teaching, take on responsibility for curricular and assessment aspects of the school, assist colleagues and so on. Given the potential greater variety of roles in schools as the teacher goes up the career ladder, the career structure fosters greater career diversification. Such opportunities for diversification already exist in Kazakh schools as with management responsibilities for teachers at schools, participation in methodological associations and mentoring of beginning teachers. These are likely to have a positive motivational effect. However, the different categories in the teacher career structure are not clearly associated with given roles and responsibilities in schools.

Attention is placed on equality whilst catering to diversity

Educational norms set standards to ensure equal treatment across students within schools. Every aspect of schooling is regulated in a clear and detailed manner, from elements related to the educational process (e.g. teachers, instructional time, curriculum, instructional materials) to more trivial ones such as the temperature of the building. Most resources are distributed on the basis of detailed norms that generally make no mention of student characteristics other than the grade level. In this way, norms seek to foster equal

opportunities as most schools are supposed to receive comparable resources. During its field visits, the review team observed strong efforts from schools to apply the norms to the best of their ability.

In addition to the great attention to equality and standardisation, the school system recognises that some groups of students require a specific treatment. For example, the Kazakh school system provides specific conditions for the following groups:

- *Ethno-linguistic minorities.* Attention is paid to ensure that the school system caters to students from an ethnical or linguistic minority group. The population of Kazakhstan is historically multi-ethnic and the government promotes toleration and harmony.
- *Gifted students.* Mechanisms to identify and provide gifted students with advanced learning opportunities are well developed in Kazakhstan. Gifted students are identified through psychological school entrance tests and on the basis of academic performance and results in the Olympiads. Many also apply to, and might receive scholarships, to attend specialised schools. The most academically gifted are admitted to the Nazarbayev Intellectual Schools with full scholarships and boarding opportunities as required. These programmes recognise children's differential talents and abilities and provide them with opportunities to develop their skills at a more accelerated pace.
- *Students with disabilities.* Increasing attention has been placed in accommodating children with disabilities in mainstream schools. Recent efforts and stated ambitions towards educating children with disabilities in mainstream schools are encouraging.
- *Low income and at-risk students.* Norms and targeted financial support are used to ensure that students with socio-economic difficulties attend school. Strategies used to ensure support to needy students are establishing a requirement for schools to closely supervise student attendance and regularly monitor out-of-school children as well as the existence of school psychologists and social pedagogues in schools. Another strategy is the use of targeted financial support, which has been articulated through the definition of several categories of disadvantage. Students who are considered disadvantaged are entitled to certain benefits such as free meals. Also, schools are supposed to receive an allocation amounting to at least 1% of their budget from local governments to be distributed to students in economic difficulty.

Challenges

There are inequities in the distribution of resources

Resource distribution could better account for the specific needs of students and schools

The distribution of resources is limited in the extent to which it takes account of the specific needs of students or schools. The strict application of norms to ensure equality across students is detrimental to efficiency and equity. By severely constraining the frontier of possibilities for schools and local governments to match the mix of resources to the specific needs of schools and of local education systems, allocations are inevitably suboptimal. Schools and *rayons* have little flexibility to invest more in human resources (by increasing staffing levels or by raising teacher salaries) if these are more acutely needed, or alternatively to invest in physical resources (school buildings, school equipment such as smart boards), if the present ones are insufficient or outdated.

Limited attention to the specific needs of students and schools also results in inequities. There are very few programmes and resources targeted at students from a disadvantaged background or with learning difficulties. This means that disadvantaged or

low performing students are in an unequal footing. If the design of finance schemes does not take into account the sometimes marked differences in the costs of students' instruction, schools may provide lower quality education or seek alternative ways of raising money that can hinder equity. The review team observed differences in resource availability between schools serving different types of students. Rapid urbanisation and strict adherence to norms disadvantages some students attending urban schools, which tend to operate multiple shift schedules with overcrowded classrooms. Similarly, the rapid expansion of the student population means that some students in crowded schools lack free textbooks. PISA data indicate that approximately 12% of 15-year old students did not have textbooks for key subjects in 2012 (OECD, 2013a).

The current concept of disadvantage used is too narrow

The concept of inclusive education may be overly narrow in Kazakhstan as it focuses too narrowly on disabilities and more extreme socio-economic conditions and results in a relatively small number of students entitled to receive support. The review team was told that out of approximately 4.5 million children aged 15 or below, only 220 000 to 260 000 (approximately 5%) come from "vulnerable groups". In one school enrolling over 1 600 students, only 100 students (6%) qualified for free meals under current norms. Existing norms have little ability to encompass more students in the "disadvantaged" category or to allocate more resources to more disadvantaged students. Schools with higher shares of either disadvantaged students or students with learning difficulties receive no additional resources. Yet international research is clear in finding that properly designed and financed compensatory education programmes can reduce the gap in achievement between advantaged and disadvantaged schools and students (McEwan, 2008). This is highly relevant to Kazakhstan given the evidence that shows that socio-economic background of students and schools make a difference in students' performance (see Chapter 1).

Although steps have been taken in Kazakhstan to broaden the concept of inclusiveness, the review team formed the impression that the discussions are still far from the concept of equity prevalent in OECD countries. OECD countries recognise that schools with higher proportions of disadvantaged students are at greater odds of suffering from a myriad of social and economic problems that can inhibit student learning. In addition, a higher share of disadvantaged students can have adverse effects on the school climate and increase the complexity of their learning needs (Lupton, 2004).

Little support is provided to low performing students

There is no systematic policy or guidelines to support students who are falling behind with their learning. This often goes alongside little recognition of education policy of the fact that learning difficulties might be the result of difficult socio-economic circumstances. Support to individual students with learning difficulties is provided at the initiative of schools but no additional resources are allocated to schools that have a larger share of low performing students. Lack of systemic support is likely to leave schools trapped between more demanding learning environments and inadequate resources.

The inclusion of students with disabilities remains limited

Schools in Kazakhstan do not appear to be making enough progress in accommodating children with disabilities. While the effectiveness in meeting the needs of students with a disability is not the focus of this Review, it was analysed in depth in a previous OECD

Review of students with special needs and disabilities in Kazakhstan, the Kyrgyz Republic and Tajikistan (OECD, 2008a). The Review noted that the main challenges in Kazakhstan are catering to students with disabilities and special needs in mainstream schools rather than in separate correctional schools and the existence of large numbers of children with a disability and special needs who were not in any school, special or mainstream, and receiving little or no useful education in their own homes. In separate schools, students might have fewer opportunities to access the full curriculum, interact with other children and develop the abilities and potential that they share with other children. The Review recommended adopting the wider concept of “special needs education”, the prevailing one in the majority of OECD and many other countries, which aims to educate most students in mainstream schools and only those with serious disabilities in specialised schools. A recent meta-analysis found that including special needs students within regular classrooms had neutral to positive effects on the achievement of their classmates (Ruijs and Peetsma, 2009).

Despite the measures undertaken in recent years, the road ahead towards full inclusion of students with special needs and disabilities seems to be long in Kazakhstan. When children with a disability do study in mainstream schools, they tend to be segregated into special classes; approximately 400 schools have such special classes, attended largely by approximately 8 000 students with “developmental delays.” Moreover, many special needs students are still institutionalised into special boarding schools or are studying at home rather than in their local school. For example, out of approximately 39 000 children with a disability identified in 2012-13, approximately half were orphans with a disability in boarding schools, one-third were other children with a disability being educated in boarding schools and approximately one-fifth were studying at home, which may mean they were for all practical purposes out of school (IAC, 2014). Low pre-primary enrolment rates might result in many children’s special needs going undiagnosed or unnoticed until primary school. There is a severe lack of services to address disabilities before or during schools; there are very few education professionals trained to work with children with disabilities, technology is not available to schools to support children with special needs, and medical services are not always available for children with severe developmental problems. Although new construction and rehabilitation norms require the physical modification of schools to accommodate children with a physical disability, these norms are inconsistently applied. The review team found no evidence of either ramps or elevators in the more modern schools it visited, and in older schools we encountered hazards such as uneven floors and stairs lacking hand railings. Furthermore, few steps have been taken to reduce the number of special needs children educated in their own homes, or improving the quality of the education they receive.

There is an overemphasis on top-performing students

Kazakhstan’s education system places great importance on preparing students for participation in academic Olympiads and gives high priority to “gifted children”, while the performance of average or lagging students does not receive the same attention. About 17% of the Republican budget for education in 2013-14 was targeted to the training and education of gifted children, organisation of Olympiads, and contributions to Nazarbayev Intellectual Schools (NIS). Students’ success in the Olympiads is a source of pride and satisfaction for schools; students who have won awards tend to be featured in the corridors of schools and teachers are rewarded with bonuses and better career prospects.

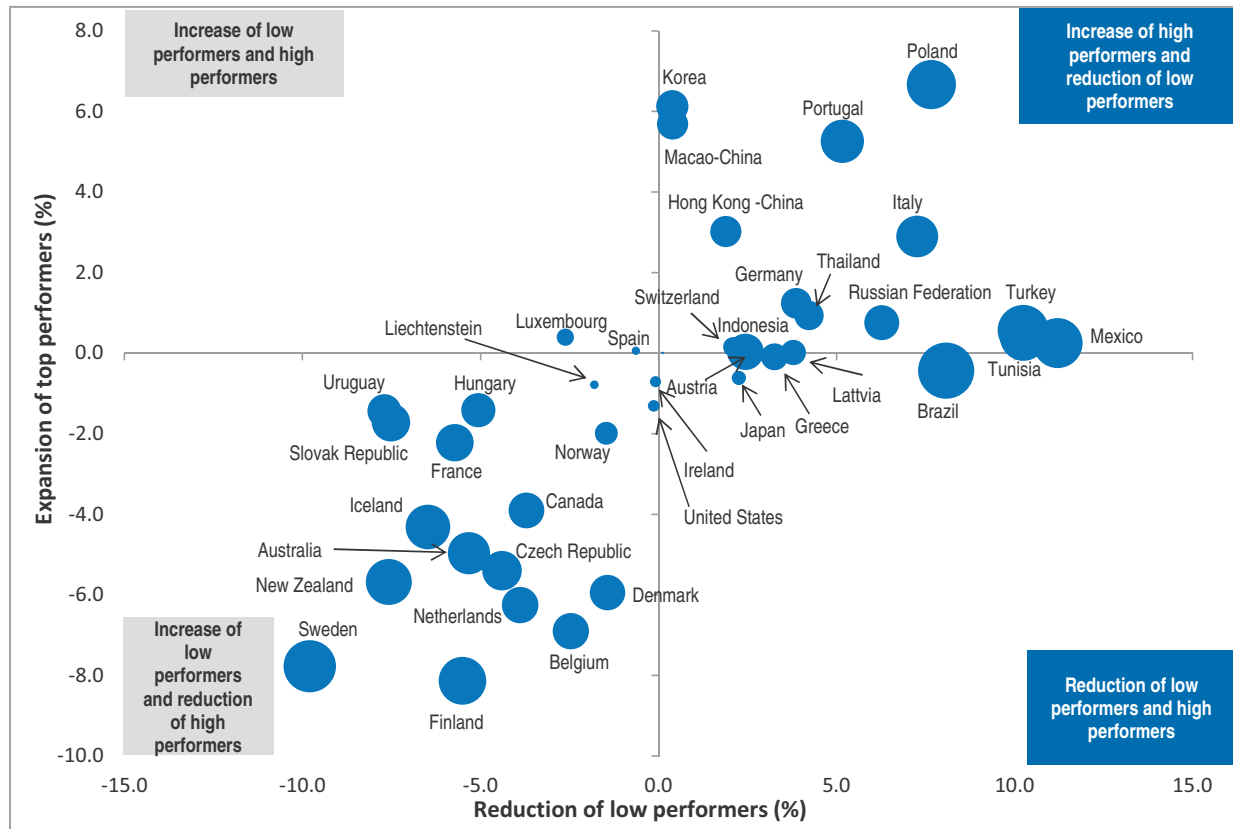
The small set of NIS schools is funded at levels considerably higher than mainstream schools. If all schools in Kazakhstan could be resourced at the same level as the NIS, the current budget for general education would increase by more than 300%. While this inequity has little overall effect on the allocation of resources across the system, it limits the validity of NIS schools as innovation labs because the conditions in these schools are so much better than in the rest of the network. In particular, the current number of NIS schools is not sufficient to ensure large scale impact across the national education system, and the clear vision of the future of NIS schools, including how many there should be, is not yet adopted.

While NIS schools or similar schools catering to gifted students do not directly discriminate students on the basis of their family income, economically disadvantaged students may have little access to extracurricular classes that prepare for admission to these schools. The annual costs associated with extra classes in subjects that are prerequisites for admission to NIS or universities are relatively high. For example, in Astana, each class offered by one extended education organisation costs 5 000 Kazakh Tenge (KZT) per month, or about KZT 50 000 per year. Children applying to grades 2-6 of NIS are tested in mathematics, Kazakh language, Russian language and English language; only classes in Kazakh language are offered free of charge by this organisation. In addition, children applying to grades 7-11 of NIS must take tests in a science related to their direction; classes in physics are also charged KZT 5 000 per month. The total cost associated with these extra classes, therefore, could be as much as KZT 200 000 (approximately USD 1 100) per year – close to 10% of GDP per capita (IAC, 2014); these costs are incurred by a high share of students who wish to apply to university programmes (NCESE, 2012).

The Kazakh approach to top performers is of particular concern in view of the size of the country and is not yielding the expected results. With a small population, the opportunity costs are very large. Underdeveloped human capital hampers productivity growth and limits the effective and full use of resources (Heckman, 2011). International assessments do not show an extraordinary number of top-performing students while they show that a large number are falling behind their peers in other countries. For example, while Kazakhstan produced 881 school-aged winners of international science competitions in 2010 (OECD, 2014b), only 0.2% of its 15-year-olds scored at the top two levels of PISA science assessments in 2012 (compared to the OECD average of 8.4%). At the same time, 42% of Kazakhstan's students scored below the basic science proficiency level in PISA 2012 (versus an OECD average of 18%) (OECD, 2014d).

Evidence from PISA suggests that improving high and low performance can go hand in hand, but it is reductions in low performance which drive overall improvements in the education system. A total of 39 countries and economies from OECD and non-OECD countries participated in both PISA 2003 and 2012 rounds in which the main field of assessment was mathematics. The ten countries that achieved the greatest increase in the mean average performance, adjusted by differences in sample size and socio-economic composition of students, were in ranking order: Brazil (35 score-points), Tunisia (29), Mexico (28), Poland (27), Turkey (25), Portugal (21), Italy (20), Indonesia (15), the Russian Federation (14) and Korea (12) (OECD, 2014d) (see Figure 3.2). Eight out of the ten countries and economies with the highest average improvement are also among the ten countries with the highest reductions in the number of low performer students. Only half of those countries with the highest average improvement were among the ten countries with the highest increase in

Figure 3.2. **Change in the average score and proportion of top and low performers in PISA from 2003 to 2012**



Notes: Bubbles are sized according to the change on the average score. The horizontal axis refers to the reduction of low performers (i.e. a positive change means a reduction of the proportion of low performers) and the vertical axis refers to the increase of high performers (i.e. a positive change means an increase of the proportion of high performers).

Source: Data from OECD (2014d), *PISA 2012 Results: What Students Know and Can Do (Volume I, Revised edition, February 2014): Student Performance in Mathematics, Reading and Science*, <http://dx.doi.org/10.1787/9789264208780-en>.

the number of high performers but they are all among the top 20. By lifting the performance of their lowest-achieving students, these countries and economies have narrowed the gap between high- and low-achieving students and, in some cases, increased equity as well, as many low-achieving students are also from disadvantaged backgrounds.

The new school funding model requires further development

Governance

The new funding scheme involves a partial recentralisation of school finances as the bulk of educational expenditures (namely funds for educational process) will be determined at the central level and transferred from the Ministry to schools, via the respective *oblast* and *rayon*, on the basis of the formula. Local governments will have fewer opportunities to adjust the allocations to local needs. At the same time, no mechanism has been created to address the differences between the theoretical calculation of needs through the formula and the actual needs of schools. In the context of Kazakhstan, where the quality of data can be of concern (see Chapter 5), the use of a data-driven approach such as a formula with limited ability to adjust to the great diversity of conditions in which schools operate might pose important challenges. In other countries, such as Lithuania, the grant is transferred to the

local government which then has the right to reallocate a limited amount (up to 5%) of the grant funds between individual schools (see Annex 3.A2). This provides some measure of flexibility without increasing the amount of required data for the formula.

The formula will not apply to schools for gifted students – including the NIS schools – and small-class schools. The finance mechanisms for these types of more costly schools have not been reviewed yet. Thus, there is a risk that gifted and small-class schools will continue to be financed with the current model. While there are just a few NIS schools in the country, small-class schools comprise about half of all general secondary education institutions, so perpetuation of their current financing is very problematic, as it is likely to exacerbate the inefficiencies and inequities of the system. Also, the existence of multiple finance mechanisms increases the management costs and might hinder public accountability. If the allocation formula for the educational process part of school budget is rolled-out nationally without inclusion of small-class schools, it will become very difficult to unify school financing in the future.

Design

Unlike a typical allocation formula for schools, the equation proposed in Kazakhstan does not clearly identify groups of students for whom separate per student amounts should be allocated. It uses both student characteristics (for example, grade level) and teacher characteristics (for example, add-ons to salary due to school location), see Annex 3.A1. Thus, it cannot be considered a genuine per student formula. Instead, it defines a complex set of coefficients governing teacher resource needs through the number of classes (determined by the number of students and by assumed class sizes) and through a large number of indices related to different compulsory allowances.

The formula is overly complex. The large number of indices and cases means that the formula will be almost specific for every school, which might make its application more difficult and costly, and raise transparency issues. Applying the fundamental counting principle, we can deduct that the formula contains more than 200 standards.⁵ Of course, these are just different per student amounts as allocated by the formula, the formula itself does not separately list these standards. The existence of a large number of standards means that the formula is more costly as well as less stable and predictable. The maintenance of a price index for each of the standards is very costly. Moreover, the introduction of new rules and classifications might require a major restructuring of the formula. In addition, the overall allocation to schools is more difficult to predict as any adjustment might generate unwelcomed deviations from the original allocation. An overly complex formula also hinders transparency and the ability of all stakeholders to understand how resources are distributed.

Despite the large number of standards, the formula might not capture with enough accuracy class size, which greatly varies in Kazakhstan and strongly influences the costs of provision. Only two normative class sizes have been defined: 20 for rural schools and 24 for urban ones. In contrast, the Lithuanian allocation formula, for example, uses twice as many normative class sizes (10, 15, 20, 25) despite being a smaller and more homogenous country. Moreover, the normative class size for rural schools (20 students per class) is very large and thus is likely to allocate insufficient resources to some of them.

Another variable of concern is the reduction in the allocation to be applied when maximum class sizes are exceeded. The reduction is difficult to apply and has a small deterrent effect. To apply the reduction, the Ministry will require accurate reliable information about the number of students in every class and in every school in the country. The collection

and verification of such data is likely to represent a sizeable challenge. The actual reduction seems too small (at most 6% reduction for students above 40 in a given class) to produce a deterrent effect. Indeed, more stringent approaches could be considered to discourage excessive class sizes, such as not allocating funding for any student exceeding the threshold. A more simple and effective approach would be to remove this element of the formula and use school inspection and attestation altogether to ensure that classes are not too large.

Implementation

As originally planned, the timeline for the implementation of the new funding model is certainly too tight. The piloting time is also very short to observe and assess the effects of the new financial mechanism and new managerial procedures. Moreover, the sample of schools selected for the pilot might be too small to extrapolate the findings to the national level. In addition, as originally planned, the pilot would end just before the full roll-out expected for 2015.⁶ There might not be enough time to conduct a thorough review of the results and further refine the formula. The new funding model also requires changes in the intergovernmental transfers and thus will impact national, regional and local budgets, which will be negotiated before the end of the pilot.

The impact of the new funding scheme, as piloted, has not been thoroughly analysed, although the Financial Center conducted some analysis at the end of the 2013-14 academic year. No nation-wide simulations of the effects of the new allocation mechanisms were conducted or are even planned. Such simulations could provide insights into the potential impact of its implementation in school, local, regional and national budgets as well as help prepare for the actual calculations of allocation, including ensuring that all required data are available, accurate and reliable. Such simulations, in particular, would reveal which schools and *rayons* who would win under the new financial model (would receive allocation higher than historical costs), and those who would lose. This is in turn necessary to assess the need for a transition period with hold-harmless clauses, and to prepare all stakeholders for the forthcoming changes. The review team heard during the meetings that little importance has been attached to the simulations of winners and losers at the school level with the new funding methods as nominal expenditures on education are on the rise. While all schools might receive at least the same nominal amounts, some schools might be worse-off in real or relative terms. In contrast, the introduction of a buffer mechanism (i.e. hold-harmless clause) for a limited period to help schools and local authorities adjust is common in other countries.

Furthermore, despite the efforts to provide clear information about the new funding methods, the review team formed the impression that local authorities and school principals might be uncertain about the implications for their schools. This means that those who hold considerable responsibilities for actually implementing the reform might have an insufficient understanding of the principles and practical issues which they will face in the very near future. Thus, the risks of the national roll-out of the formula in this situation are considerable.

Small-class schools raise quality, equity and efficiency concerns

Inefficiencies

An extensive school network populated with a large number of small-class schools might not be the most cost-effective option to deliver education services in rural and remote areas. The preponderance of small schools is driven by the Soviet-era belief that every village deserves its own school, despite the presence of many small schools within a

short distance of each other, without sufficient regard to the quality, equity and efficiency of the education services provided. Small-class schools operate in villages with as few as five school-aged children, which would imply a student-to-teacher ratio of 5 to 1, and represent high unit costs. Indeed, the strict application of staffing norms squeezes school budgets as low student-to-teacher ratios are at the expense of either the quality of teachers, maintenance, equipment and instructional materials.

Inequities

Students in small-class schools tend to suffer from poorer learning environments. Some evidence suggests that the teaching quality in small-class schools is lower than in other schools and thus calls into question the benefits that could accrue from lower student-to-teacher ratios. First, the proportion of teachers at the highest category is between 2 and 3 times lower in rural than in urban areas (see Annex 3.A3). Similarly, the proportion of teachers with “No Category” is systematically higher in rural areas. Assuming that a higher category in the career structure is associated with teachers with greater competencies, students in urban areas are, on average, provided with higher quality teachers than students in rural areas. This contrast is also visible, even if to a much lesser extent, in the proportion of teachers with no higher education qualification (91% in urban areas and 86% in rural areas, see Table 3.2). There is also some anecdotal evidence that highly effective teachers are less likely to work in disadvantaged schools and more likely to work in schools for gifted students (OECD, 2014b). Second, schools located in rural areas are more likely to experience teacher shortages in specialised subjects. Third, initial teacher education programmes might not prepare teachers for the specific challenges that they will face in small-class schools, such as multi-grade teaching, whilst international research shows that effective multi-grade teaching requires capable teachers with a specific preparation to teach in these environments and additional resources, such as different types of instructional materials (Mariano and Kirby, 2009; Veenman, 1995; Burns and Mason, 2002).

The availability and quality of instructional materials and equipment in small-class schools can also be questioned. The review team noted during the visit that teachers in small-class schools reported having to purchase “everything” – all instructional materials other than the students’ textbooks. In addition, staff at one school mentioned that full sets of textbooks were provided every five years, with no annual replacements for unintentional losses or damage; the result was that some students in some grades and classes did not receive free textbooks. However, according to the official regulations, 20% of textbooks are to be replaced every two years to take into account wear and tear. Similarly, rural small-class schools also reported that their lack of internet access contributed to the absence of such newer technologies as “interactive white boards” in these schools; nearly all (93%) of urban schools but fewer than half (43%) of rural schools have “interactive classrooms” (IAC, 2014).

Lower performance

National and international student assessments suggest that the learning environment in small-class or rural schools hinders educational performance. The Unified National Test (UNT), Kazakhstan’s school-leaving and higher education entrance examination, shows significant differences in participation rates across regions – from 55% in North Kazakhstan to 82% in Astana city – which might reflect the fewer opportunities for specialised learning in grades 10-12 in some geographical areas. Also, the average urban-rural difference in the results was 8.74 points in 2013 in favour of urban areas

(NCESE, 2013b). Significant differences are also observed between cities and other towns or villages below 100 000 inhabitants in the performance of 15-year-olds in PISA 2012, with the reading score gap equivalent to about half a year of school, which is slightly smaller than the OECD average (OECD, 2013b).

And little support exists

The lack of clear strategic vision to improve education service delivery in rural and remote areas hinders the overall performance of the education system. Despite accounting for half of all public schools, small-class schools are increasingly excluded from major policy initiatives, such as the e-learning programme or the new funding scheme. Also, the review team was not informed about any further plans on school network consolidation and schemes to foster between-school collaboration, such as the recent initiative to create resource centres, which is still very limited. The lack of a strategic vision for small-class schools threatens the long-term sustainability and equity of education provision in Kazakhstan's rural areas.

The creation of resource centres, which aim at improving access to quality education for students of small-class schools, has not been carefully planned and scheduled to maximise its impact. The current network is not the result of a school mapping effort to review where education resource centres are feasible, where school consolidation is a better option, and where existing small-class schools need to be maintained. Such an effort is necessary to adequately plan the level of human and financial resources needed by the network of resource centres. In addition, small-class schools have not been consulted as for the type of support that could be more valuable for them. Also, resource centres currently only support about 10% of small-class schools. The timeline and costing of full coverage is unknown. The potential impact of this initiative is also limited by its design. The key initial educational stages have been excluded as the initiative only targets students in grades 8 and 9; including all grades would require a continuous effort by resource centres. Similarly, there seems to be greater scope for mutual collaboration between teachers and school leaders of small-class schools and resource centres.

Significant inefficiencies hamper the management of human resources

Lack of clear standards for teachers and school leaders hinder their potential

In Kazakhstan, there is no national framework of teaching and school leadership standards, a clear and concise statement or profile of what teachers and school leaders are expected to know and be able to do. Approaches to educating, developing and rewarding effective teachers and school leaders are weakened in the absence of profession-wide standards and a shared understanding of what counts as accomplished teaching and school leadership. Teaching and school leadership standards are useful mechanisms for clarifying expectations of what systems of initial education and professional development should aim to achieve, serving as a framework for the selection of candidates in the recruitment processes, offering the credible reference for making judgements about their competence (as in their attestation), guiding professional development, and providing the basis for career advancement. Lack of clear standards also suggests that the criteria used in recruitment, professional development and appraisal are likely to differ across schools.

The current reference in Kazakhstan for the teaching profession and, in particular, for teacher attestation (see Chapter 4), is the “Standard Qualification Characteristics of Teaching Positions and Equated Employees” which includes a description of official duties,

additional knowledge required, and qualification requirements. “Official duties” are a basic description of the main responsibilities of teachers (e.g. preparing lesson plans; communicating with parents), “additional knowledge required” relates to aspects such as knowledge of laws and regulations within the education sector, while “qualification requirements” describe a few basic competencies teachers should have at the different categories of the career structure (e.g. use forms and methods of active learning; assess students). These do not reflect the broad range of competencies that teachers require to be effective practitioners in modern schools. Such descriptions need to encompass the whole range of domains covered by a teacher’s work such as planning and preparation; activities within the classroom; instruction; and professional responsibilities and provide a detailed description of competencies teachers should have, within such domains, to be accomplished in their teaching (e.g. communicating clearly and accurately; managing student behaviour and organising physical space; reflecting on teaching) (OECD, 2005).

The Standard Qualification Characteristics of Teaching Positions and Equated Employees specifies a long list of responsibilities for each member of school leadership teams and details the norms that they have to comply with. The review team observed that school leaders are well-aware of these regulations and their meaning. However, it is difficult for them to relate norms to day-to-day work and use them to raise their performance. While the lack of clear standards might not be of concern in a system where school leaders are mainly tasked to manage resources in compliance with norms, standards become an important tool to set clear expectations and hold school leaders accountable in the move towards greater school autonomy (as recommended in Chapter 2).

Initial teacher education raises a range of concerns

Initial teacher education raises a range of concerns. First, there is some anecdotal evidence indicating that initial teacher education is not attracting the best candidates from school education. This reflects the loss in the attractiveness of teaching as a result of low salaries, difficult working conditions and the low status of the profession. A consequence of this is the high degree of feminisation of the profession, considerably above the OECD average. Indeed, teachers’ relative wages are likely to affect not only the number of people who are willing to teach, but also their characteristics. The growing feminisation of teaching has been attributed, in part, to the relative decline of teacher salaries over the long term (OECD, 2005).

Second, the quality of initial teacher education programmes is not warranted. In Kazakhstan, it is possible to teach in primary school with a teacher education degree obtained from vocational and technical education at secondary or post-secondary non-tertiary level. About 12% of teachers do not have a higher education qualification for teaching. In addition, there is an impressive supply of initial teacher education programmes, on offer at 62% of the institutions of higher education in the country of which less than half receive public funding. These aspects raise concerns about the quality of teachers’ initial preparation.

Third, there are indications that the teacher education system is producing an excessive number of graduates. In the 2012-13 academic year, pedagogical colleges at pre-tertiary level produced 9 223 graduates of primary teacher education programmes while institutions of tertiary education produced 33 371 graduates who can teach in general school education. This number of graduates is significant as it corresponds to 11.4% of the entire teaching workforce. Of course, only a fraction of graduates go into

teaching as some engage in further study (particularly graduates from pedagogical colleges) and others select other jobs within and outside education. In light of the current size of the teaching workforce (and current student-teacher ratio levels), there seems to be room for the initial teacher education system to be more selective at the entry point. If teacher education programmes admitted fewer students, and if those admitted were more suited for teaching and more interested in a teaching career, the available resources could be used more effectively.

Fourth, a number of organisational aspects to the organisation of teacher education programmes are problematic. Degrees in teaching are highly specialised, sometimes providing qualifications for just one area such as physics or “Kazakh language and literature in schools with language of instruction other than Kazakh”. This grants less flexibility in the teacher labour market as the supply of teacher qualifications is then less responsive to the demand for teachers (e.g. a teacher degree in both physics and chemistry would provide greater flexibility to cover job positions in either of these areas). In addition, the review team formed the impression that practical training in teacher education programmes could be strengthened through both the amount of time devoted to it and the quality of the interactions with schools. Furthermore, entry requirements lack specific assessments to identify teaching potential and assess motivation for the profession as the basis for entry remains the UNT. However, the Ministry of Education and Science is currently designing a specific test for access to teacher education programmes (“Creative Examination”). Finally, institutions of higher education have little autonomy in designing their teacher education programmes as these are regulated at the central level (e.g. specialisations, curriculum, structure of programmes). This is problematic as institutions of higher education are in a better position to understand the needs of schools and respond more swiftly to them. A greater institutional autonomy could also benefit from the existence of teaching standards as the framework for developing the curriculum for teacher education programmes.

The number of teachers and school leaders might be excessive

Analysis of class size and student-teacher ratios as well as of the structure of leadership teams in Kazakhstan provide indications that, compared to the situation in OECD countries, the overall number of teachers and school leaders can be considered high (see Table 3.1). On the whole, Kazakhstan might be facing an oversupply of teachers even if an explanation for this is the significant proportion of small-class schools in the country. At the same time, some care is needed in the interpretation of student-teacher ratios, since in Kazakhstan a teacher’s workload is calculated in *stavkas* rather than as “full-time equivalents” and many of these teachers work only part time (see below). The contrast of class size and student-teacher ratios across regions reveals a stark difference in teacher needs between the south and the north of the country and between urban areas and rural areas. While class size and student-teacher ratios are highest in the south of the country and in the two main cities (class size above 20 in Almaty city, Astana city, South Kazakhstan, Kyzylorda and Mangystau), they are lowest in the North of the country (class size is below 14 in Akmola, Kostanai, Pavlodar and North Kazakhstan) (see Table 3.1). It may also denote a relatively low rate of teacher mobility across the country. In spite of the overall oversupply of teachers, there are instances of shortages. These tend to happen more often in some rural areas and in subjects such as mathematics (IAC, 2014).

Also, to comply with staffing norms, schools must employ a considerable number of school deputies. Principals are not able to determine the number of staff that will support them in their functions. Instead, a detailed set of norms establishes the number and functions of deputies in each school depending on its size. Thus, principals have a limited ability to form a leadership team based on his or her leadership style, profile of potential teachers available to take up leadership positions or the specific needs of the school at a concrete point in time. The size of the leadership team might be excessive in view of the high opportunity costs. In particular, the proportion of school leaders to teachers and to students in small-class schools is very high. For example, the review team visited a school of about 150 students with 20 teachers and 7 school leaders. The size of the typical leadership team in Kazakhstan is considerably larger than in OECD countries. In addition, there is some duplication and excessive fragmentation in the distribution of tasks. In schools with two languages of instruction, for example, each language has its corresponding pedagogical deputy even when the same person could handle both language tracks. The 9-hour limit for school deputies to undertake other activities such as teaching or additionally paid tasks also hinders the ability of the school principal to distribute leadership tasks in the most efficient way (see Chapter 4). Whilst teaching might enable them to know better the realities of their own school classrooms and strengthen their position and authority before other teachers, it consumes time that they could spend on school management and leadership.

Inefficient staffing levels are detrimental to the quality of teaching

The large number of staff squeezes school budgets, creates rigidities and crowds out investments in other areas. As school principals have to follow national curriculum norms in allocating teaching duties and cannot alter their salaries determined by national regulations, staff costs become a rigidly fixed expenditure. About 93% of school expenditures in rural schools are devoted to staff compensation. This means that budgets are very tight and that principals have very limited room of manoeuvre to manage resources in a more efficient way or invest in school development activities. Some principals of small-class schools reported to the review team that only salaries and basic facilities maintenance (such as heating and electricity) are funded and that there is no budget for purchasing library books, internet access and pedagogical equipment. Thus, inefficient employment levels are of particular concern because opportunity costs are high as the marginal impact of investments in other inputs is very high.

Given that resources are limited, the large number of staff discourages improvements in their compensation and professional development. Kazakhstan has publicly recognised that low salaries hamper the attractiveness of the profession and some steps have been taken to increase salaries in recent years. The salary gap remains wide and suggests that larger increases are needed to make a difference (see below). However, the large number of teachers limits any sizeable increase. Moreover, investments in the professionalisation of the entire teaching workforce can be questionable under the current staffing levels as the costs of professional development are directly proportional to the number of teachers.

Effective school systems require the right combination of high quality and well-trained personnel, adequate educational resources and facilities, and motivated students ready to learn – and resources must be distributed in a way that allows this. Resources are limited and how well countries succeed in directing them to where they can have the most impact matters. A recurrent trade-off that has a great impact on expenditures due to the

labour-intensive nature of education is the definition of class sizes: small class sizes require a large number of teachers whilst greater class sizes can free up resources to improve teaching quality. Research has found that higher teaching quality has a greater impact on student achievement than smaller class sizes (Rivkin, Hanushek and Kain, 2005).

Teacher employment under the Stavka system raises concerns

The conception of teacher employment in Kazakhstan, whereby basic compensation is associated purely to the teacher's teaching load (*stavka* system), is a source of concern. A recent regional study on recruitment, development and salaries of teachers in the Central and Eastern Europe and the Commonwealth of Independent States (CEECIS) region carried out by UNICEF discusses the *stavka* system in the region (UNICEF, 2011). It notes that, in combination with a low base salary (as is the case in Kazakhstan, see below), "the *stavka* system has in effect turned the teaching profession into a part-time job that encourages teachers to teach excessively, take on an additional job, or look for additional sources of income in or outside the school." This leads some teachers in Kazakhstan to have very heavy teaching loads and others to engage in activities such as private tutoring of students after regular class hours.

A heavy teaching load or a job in addition to teaching leaves little room for teachers to engage in other activities at the school such as collaboration with colleagues, reflection on own practices, mentoring of less experienced teachers, communication with parents and professional development. This is compounded by the fact that teachers are not expected to stay on the school premises beyond their teaching time, which also limits their engagement with students. As explained in UNICEF (2011), "many initiatives that attempt to strengthen student-centred teaching methods do not sufficiently consider the limitations of the *stavka* system in terms of additional pedagogical work." This might lead "to active resistance to implementing student-centred teaching methods that require extensive lesson preparation or formative student evaluation." It is also unclear why, in the teaching profession, tasks such as marking student work, classroom management, in-depth teaching of a subject are to be paid separately, as is currently the case in Kazakhstan. Another key question is the limited time teachers have for the preparation of their classes. As noted in another OECD report (OECD, 2014b) neither the *stavka* system nor the list of tasks paid extra reward time spent on the preparation of lessons. Those with a heavy teaching load or with an extra job find it challenging to prepare their classes thoroughly.

Finally, as concluded in OECD (2014b) the *stavka* system may disadvantage teachers in urban areas where an oversupply of teachers is more common. Less experienced teachers may also find it more difficult to be given the option of taking on higher teaching loads (since these are preferably given to more experienced teachers), and might end up teaching less than one standard teaching load (one *stavka*) which in turn lowers their income and limits the attractiveness of their job (OECD, 2014b).

Low teacher and school leader salaries lead to an inefficient use of their time

Given the complexity of the teacher salary structure in Kazakhstan, it is not simple to analyse teacher salary levels. However, there are good indications that salary levels are low both for teachers and school leaders. A thorough analysis of teacher salary levels in Kazakhstan is developed in OECD (2014b). It clearly shows that basic salaries (base salary with an account of teachers' qualification levels and years of experience) are very low. For example, in Kazakhstan in 2011, the basic salary of a teacher with one teaching load (one

stavka) with a higher education qualification and 15 years of experience in primary and secondary education was 75% and 70% lower than the salary of a worker with comparable academic credentials, respectively. Teacher remuneration only goes above the salary of the average worker with higher education qualifications when he or she works 1.5 *stavkas* (27 hours of teaching), has reached the 1st category of the career structure and obtains average compensation for a number of extra tasks (class management, marking students' work, responsibility for specialised classrooms, evening classes, management of the boarding section of the school, chairing the methodological association or other commissions, and in-depth subject teaching). These constitute probably an unreasonable number of tasks for a single teacher, placing their salary above that of the average worker with higher education qualifications only in 11% (for primary teachers) and 34% (for secondary teachers) (see Table 5.10, OECD, 2014b). As pointed out in OECD (2014b), this simulation demonstrates the magnitude of potential disadvantage in income for teachers whose tenure and/or working environment does not permit taking on additional work. According to data from the World Bank, the minimum starting salary for a teacher in 2013 was 35 747 Kazakh Tenge (KZT), compared to an average salary in the education sector of KZT 68 971. These salaries were considerably lower than those of other skilled professions: the average salary was KZT 210 000 and 81 340 in the banking sector and in the healthcare sector, respectively (World Bank, 2013).

As explained earlier, the low level of teacher salaries (per *stavka*) induces many teachers to teach very high number of lessons per week, up to and sometimes exceeding the regulatory limit of 27 lessons per week. This is of particular concern in cities, where salaries might be insufficient for living expenses. Some schools or local governments have looked into ways around. Thus increasing basic teacher salaries would allow decreasing average weekly teacher load and employ more younger teachers, contributing in this way to improving teaching quality. It is certainly possible to achieve this at least in large, rich cities as Astana and Almaty, but presumably also in an increasing number of regions. However, this is not allowed, except for some limited bonuses which may be occasionally paid to teachers.

It is also clear that the basic salary of teachers is low compared to the generosity and diversity of compensation for additional tasks, extra qualifications, career advancement and "higher-level" professional development. Moreover, the practice of rewarding teachers with financial bonuses, in some regions and in the context of the per-capita funding scheme, seems to be mainly based on narrow criteria such as student achievement in the UNT or at Olympiads – meaning that, in practice they are mostly available to teachers of gifted or advantaged students (OECD, 2014b).

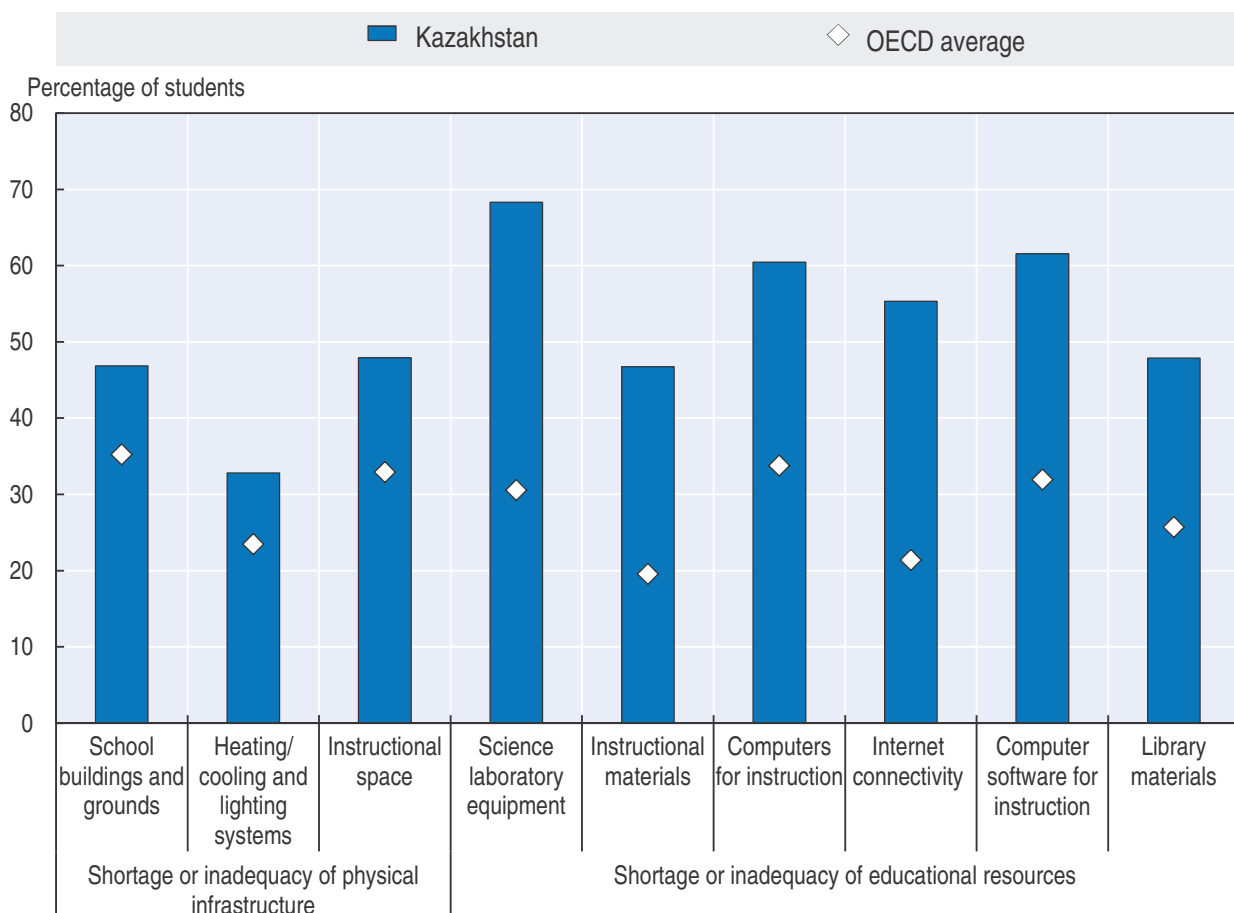
School leaders not only have low salaries compared to other professionals in similar leadership positions but also their salaries might not be higher than those of teachers. The leadership salary premium is not clear-cut: school leaders might be well-compensated or under rewarded for their tasks and accurate data are not available to calculate their average salary. Starting basic salaries are differentiated: new principals earn roughly 8% more than new deputies, who in turn earn 32% more than new teachers. In practice, however, disentangling salary differences is much more complex. The starting salaries of school principals cannot be readily compared with those of new teachers as the former are required to have accumulated at least 5 years of experience to apply for the position. Moreover, all the school deputies interviewed during the Review visit spent 9 hours per week teaching or undertaking other activities for which they also receive the associated

complements, such as the category held. As their compensation is only linked to their years of service, school leaders might have no incentive for performance or to take-up professional development as their effort, progression or achievement does not influence their pay.

There are concerns about the state of school infrastructure

Chronic underinvestment in maintenance and upgrading of schools has left many buildings in need of modernisation in Kazakhstan. Old buildings that fail to heat properly in the winter, or are too expensive to heat, threaten students' health and ability to learn in one of the world's coldest climates. Three-shift schools remain to be used in some parts of the country and two-shift schools are the norm. Schools without indoor toilets are alarmingly common in rural areas of Kazakhstan. Many schools lack basic equipment or instructional materials, despite the efforts undertaken in recent years. In PISA 2012, school principals were asked whether the quality of their schools' physical resources hinders instruction a lot or to some extent (see Figure 3.3) (OECD, 2013a). About one third to half of 15-year-olds are in schools whose principals reported that shortages or inadequacy of school buildings and grounds; heating/cooling and lighting systems; or instructional space

Figure 3.3. **School principals' perceptions of adequacy of physical infrastructure and educational resources**



Source: OECD (2013a), PISA 2012 Results: What Makes Schools Successful (Volume IV): Resources, Policies and Practices, <http://dx.doi.org/10.1787/9789264201156-en>.

hinder their school's capacity to provide instruction. In addition, half or more of 15-year-olds are in schools whose principal reported that a shortage or inadequacy of educational resources (e.g. science laboratory equipment, computers, Internet connectivity, computer software for instruction) hinders instruction.

International research findings suggest that physical resources matter below minimum standards. Evidence consistently suggests that the absence of essential facilities is detrimental to learning, although research shows a weak association between school-based inputs, including infrastructure, and education outcomes (Murillo and Roman, 2011; OECD, 2013a).⁷ In other words, adequate physical infrastructure and up-to-date textbooks do not guarantee good learning outcomes, but the absence of such resources is likely to have a negative effect. Poorly designed and maintained schools (i.e. those with inadequate acoustics, temperature, light and air quality), often found where educational achievement is low, can have a detrimental effect on teacher and student engagement and adversely affect student outcomes and can pose risks to student and staff health and safety (Higgins et al., 2005). Moreover, the condition of schools can indicate to the community the value of schooling as schools shape the appearance and atmosphere of the surrounding environment.

Policy recommendations

Devote greater resources to low performing and disadvantaged students and schools
Embrace the concept of equity in education

The ongoing discussion in Kazakhstan to define educational inclusion provides an opportunity to embrace the broader concept of equity in education, which can be a more powerful means to level up student performance. An emerging viewpoint across OECD countries is that education systems must enable all students to succeed in their education. Increasingly, it is no longer seen as adequate to provide equal access to the same “one size fits all” educational opportunity. More and more, the focus is shifting towards providing education that promotes equity by recognising and meeting different educational needs. School failure is no longer solely attributed to shortcomings of individual students (e.g. talent, motivation, socio-economic background) but to an inadequate provision of support by schools, and by extension, school systems.

While there is not a single definition of equity across OECD countries, the OECD has defined equity as the extent to which the education system manages to achieve high levels of fairness and inclusion (OECD, 2012). Equity as *inclusion* means ensuring that all students reach at least a basic minimum level of skills. Equitable education systems are fair and inclusive and support their students to reach their learning potential without either formally or informally pre-setting barriers or lowering expectations. Equity as *fairness* implies that personal or socio-economic circumstances, such as gender, ethnic origin or family background are not obstacles to educational success. These two dimensions of equity, fairness and inclusion, often overlap. The highest performing education systems across OECD countries are those that combine high levels of quality and equity (OECD, 2012).

Broader criteria should be established to identify disadvantaged or low performing students and schools in Kazakhstan. As each national, and even local, context is unique, the criteria used are very diverse. Some of the elements typically considered to determine schools that need additional support are (OECD, 2012): (i) student outcomes (marks,

qualification levels, gain and growth, improvement); (ii) physical and human capital (finances, facilities, staff, leadership); (iii) student intake characteristics (socio-economic, migrant, specific groups, language barriers, special needs); (iv) schools' context (e.g. violence); and (v) geography and topography. The use of targeted measures is a data-intensive process that often requires improving data collection in order to capture well differences in disadvantage and ensure the correct identification of beneficiaries.

Review the current distribution of resources through a lens of equity

Achieving high levels of equity in educational inputs and outcomes is a result of a continuous effort. In Kazakhstan, an independent review of current inequities and shortcomings of distribution of resources could shed some light on which reforms could have a greater impact on equity. The results of the review should be made public and lead to discussions on ways to adjust the weights of the new funding model as well as address the current overemphasis on top performers. Educational authorities at different levels should actively monitor equity issues and refine their policies accordingly. This means, for instance, that the educational and innovative activities of NIS schools should be accounted separately and publicly disclosed.

Design mechanisms to provide greater support to low performing and disadvantaged students and schools

Differences in instructional costs need to be taken into consideration in the distribution of resources in order to enable schools to respond to different learning needs and support disadvantaged or low performing students. Resources can be channelled to schools and students in different ways, although most countries have in place a combination of the following mechanisms:

- *The distribution of resources to schools is based on a per student funding formula with a needs-based group of variables* (see below). The additional resources enable schools to better support students with, for example, additional teaching time, specialised learning materials and in some cases smaller classes. In the Netherlands, for instance, the “weight” of each student is determined by the parents’ educational level and empirical research conducted by Ladd and Fiske (2009) has shown that schools with a high proportion of weighted students effectively have on average about 58% more teachers per student and also more support staff. In the United Kingdom, starting from April 2011, schools receive an additional GBP 430 a year for every student they enrol that is entitled to a free school meal (a measure of disadvantage), with schools spending this money at their discretion.
- *Specific support programmes can target individual schools or deprived geographical areas* with a holistic approach or a focus on key levers of educational performance. Some countries have specific programmes to promote the acquisition of basic reading skills, for example, or improve teaching in low performing and disadvantaged schools (see Box 4.2). France, for instance, has a long tradition of special education areas in the use of area-based support structures. However, an excessive reliance on supplementary programmes may generate overlap, difficulties in coordinating allocations, excessive bureaucracy, inefficiencies and lack of long term sustainability for schools (OECD, 2012).
- *Provide direct support to students*, such as incentives to stay in education. Incentives may be especially relevant for students in financial need, who might be forced or tempted to leave education when the opportunity cost is high. Some countries, such as Mexico and

England, have had relative success in giving students financial incentives to stay in the education system. However, the complexity of the design of these programmes, their high cost and their mixed results indicate a need also to consider other more cost-effective alternatives (Slavin, 2010).

Postpone the roll-out of the new school funding model and refine the formula

The new school funding model would benefit from further analysis and restructuring before national roll-out is attempted. Indeed, premature roll-out risks locking the country within an unworkable, very complex formula, which would be very difficult to correct. This entails national roll-out being delayed. As of early 2015, the decision was taken and the roll-out postponed to 2018.

The design of the formula should address the challenges mentioned earlier. The formula needs to be clearly focused on students and their needs, and not on teachers and their salary requirements (see Annex 3.A1). In particular, the formula needs to take into account specific needs of specific groups of students. Annex 3.A2 provides an example of the main elements of the per student funding formula in Poland and Lithuania. Of course, it is the responsibility of Kazakhstan experts to identify which groups of students should be identified in the formula and what should be the associated weights. Some basic issues may however be formulated already:

- The formula needs to be both simplified and made more flexible. As discussed in Annex 3.A1, there is too much detail regarding the formation of teacher salaries and not enough flexibility to adjust school funding to very diverse conditions in a huge and highly varied country like Kazakhstan.
- The formula should introduce specific factors for vulnerable groups of students, such as minority students, poor and migrant students and special needs students. Even if initially the values of associated coefficients will be small, over time this may become an important policy tool for the Ministry to address educational problems of different social groups.
- The formula should not try to imitate faithfully specific salary needs of every school, because this is an impossible task and inevitably leads to a very complex and cumbersome formula. Instead, the funding model should allow for some local discretion. One possible approach is to follow the Lithuanian model and allow *rayons* to introduce limited redistribution of funds allocated to schools by the formula (see Annex 3.A2).

Delay in the national roll-out of the new funding model should be used for proper preparation to ensure that the implementation is safe and will not disrupt education provision in any city or *rayon* across Kazakhstan. Some steps of this necessary preparation may be identified as follows:

- The pilot conducted in 2014 did not yield sufficient information about the adequacy and usefulness of new funding model and of new budgeting procedures (including the role of Boards of Trustees). A more thorough piloting effort with an independent monitoring system would be very useful. The report from the monitoring should be made public, and resulting lessons included in the fine-tuning of the proposed approach.
- The inclusion of small-class schools in the formula will prevent splitting the general school system of Kazakhstan into two separate parts, each with a different financing model. While it is certainly easier to implement a new funding model only for larger schools, resulting fragmentation will be very difficult to address in later phases of the reform process.

- No formula can be considered safe for implementation without national simulations. The work necessary to perform the simulations is very similar to the work necessary to actually calculate the allocation in terms of gathering data, putting them together in usable form and performing all the necessary calculations. Crucially, both allow to link individual allocation to schools or *rayons* with the total envelope for education in the national budget. However, simulations have the added value of allowing decision-makers to analyse different proposed allocation scenarios, review changes introduced by altering specific coefficients, and see the impact of potential new factors in the formula.
- Allocation coefficients should be chosen on the basis of empirical analysis, so that the allocation does not differ too radically from the present, historically established allocation of resources. At the same time, however, reformers should not try to imitate blindly the current allocation, because doing this will perpetuate present elements of inequity and inefficiency. The desired changes in overall allocation pattern needs to be formulated on the basis of thorough review and subjected to public debate.
- Attention needs to be paid not only to the formula allocating funds for educational process, but also to the requirement that *rayons* provide all students with an adequate educational environment (see Annex 3.A1). Although the role of *rayons* in the financing of schools will be diminished, they will still be responsible for ensuring that schools are clean, heated, well-supplied and equipped. Therefore redesign of the grant system for education is a necessary part of the preparation process.
- Finally, most reforms of education finance include a transition period, during which specific “hold-harmless”, buffer mechanisms prevent radical change of funding levels from one year to the next one. This period is necessary to allow local institutions to adjust their spending patterns to the new allocation system. Moreover, such adjustments can be made only if schools and *rayons* are given some measure of autonomy in their budgeting process.

Adequate preparation for the rollout of a new funding scheme is a necessary condition for its success. This means that an in-depth study of the pilot should be carried out to shed light on the refinement of the formula before full roll-out. It is key to better understand the effects of the new funding model in schools. Similarly, the impact on local governments should also be analysed as the major part of financial resources for education will be transferred to schools bypassing local budgets. Adjustments may also be required in other areas; for example, equity considerations should be strengthened through more adequate fiscal equalisation mechanisms (see Chapter 2), to ensure that all *rayons* are equally able to provide the part of education services for which they will be directly responsible (educational environment, see Annex 3.A1).

Improve the organisation of the school network

Improve the planning for a more efficient and equitable school network

Greater planning capacity is cornerstone to create a more efficient and equitable school network. A wide-ranging review of school network organisation should be undertaken with a threefold perspective: the demand (i.e. potential enrolment, preferences of students); the supply (i.e. capacity constraints, quality); and the current and future trends and needs of the economy and society. There are already indications that a long-term rebalancing is necessary between the available school infrastructure and the prospective demand. In particular, areas with growing student populations should benefit

from sustaining the efforts to increase the available school facilities, while areas with declining populations should be subject to a well-planned downsizing of their school networks. There are several benefits to such realignment of school infrastructure in line with demographic needs. First, the unit costs of education provision in underpopulated areas can be significantly reduced if schools are consolidated, as students are grouped in larger classes and maintenance costs of small facilities decline. Second, areas with shortages of student places can reduce their reliance on two- and three-shift schooling if sufficient numbers of additional facilities are made available, thus potentially improving the learning outcomes of some students.

Develop a vision for the provision of education in rural areas

A strategic vision is required at the national level on how best to deliver education in rural areas. The current reliance on small-class schools scattered across Kazakhstan's vast rural areas is unsustainable and leads to serious concerns about its quality, equity and efficiency. The strategy should have four main pillars: (i) reorganisation of the school network; (ii) flexibility for more efficient resource management; (iii) ensuring equity and fairness of resource provision; and (iv) proper monitoring of education quality in rural schools. In the reorganisation of the school network, Kazakhstan should consider a number of different options (Box 3.4 provides country examples of approaches to rural education):

- *Closing or consolidating small-class schools.* A feasibility study can be carried out to assess which rural schools can be closed or reorganised without impairing access to education.⁸ About two-thirds of 15-year-old students (66%) are in schools whose principal reported in PISA 2012 that there is at least one other school competing for students in the same geographical area (OECD, 2013a). While many of them are likely to be located in urban areas and experiencing shortages of student places, such a large proportion indicates that there is some scope for school network consolidation. The assessment should also consider the (financial, human and political) costs, feasibility and acceptability of different alternatives such as transporting students, housing them at boarding schools, or providing education through ICTs.
- *Clustering schools or fostering collaboration between nearby schools.* The current initiative to use resource centres in order to support small-class schools needs to be independently reviewed and assessed. In view of the results, the resource centres network could be extended across the country and its role redefined so that it is able to provide significant on-going support to associated small-class schools. The financing of education resource centres should be split into two separate funding flows, one for basic teaching of enrolled students, other for the support functions. In addition to resource centres, Kazakhstan could consider school clustering or more ambitious collaboration schemes. Clustering of schools is a practice followed in a number of countries, in which a group of rural schools located close to each other retain their individual identity and legal status (thus each will still have its own principal and its own reporting requirements), but they agree to share specific resources to lower the cost and improve services rendered to students. Shared resources may include teachers (who would conduct lessons and other activities in more than one school), sport facilities (open to students from all schools participating in the cluster), computer labs and similar.

- *Conversion of several nearby small-class schools into satellites of one educational institution with a single leadership team.* This means that legal status of smaller schools will be changed, and only one school principal of the hub school will manage the operations of all satellite establishments. Similarly, there will be one budget encompassing the central school and the satellite schools. This institutional structure will allow not only transportation of satellite school students to the central school, but also travel of central school teachers to satellite establishments to conduct classes there, for example on specific school days. Moreover a decision will need to be taken about the location of new education resources, such as teacher working time or equipment: whether they will be more efficiently used in the central school or in the satellites. Similarly, it will be necessary to decide for each satellite school which grades will be taught there, for example only early education or full secondary education. Since this will be the autonomous decision of the school principal, significant flexibility in the use of resources may be achieved under this arrangement.
- *A greater use of ICT could be considered to improve the quality of instruction and broaden access in some remote areas.* Good quality education can be provided to rural students through the use of distance education, as done in such similarly large countries with remote populations as Canada and Australia (Barbour, 2011, Davis, 2010). Students in small-class schools can participate in web-based lessons, and the role of the teacher will be mainly to facilitate the process and to support students. This approach has been tried in Brazil, where schools can access online educational resources through “Educopedia”, a digital platform of lesson plans and activities aligned with the school curriculum. This platform was first developed by the municipality of Rio de Janeiro and has since expanded to serve 680 000 students with 50% of the teachers reporting to use the tool more than once per week. Overall, proper and beneficial introduction of distance and technology-aided learning requires serious preparation, including provision of appropriate content on the web, retraining of teachers in rural schools, and sufficient network connectivity.

Greater consideration and flexibility is needed to allow rural schools to manage their resources more efficiently. As discussed in Chapter 2, the current system of centrally-set norms is too rigid to allow local decision makers to employ the mix of inputs deemed most appropriate for their schools to deliver quality education. Whether a school should employ a security guard or school deputy-principal, or reallocate those resources to an additional ICT teacher, for example, is a decision best left to the school principal (perhaps in consultation with the Parents’ Committee or the Board of Trustees).

The equity and fairness of resource provision to rural schools ought to be explicitly considered. When funds are allocated to enhance school infrastructure, assign teachers, or provide ICT equipment, the needs of under-resourced schools (mainly in rural areas) should be given due consideration. This can be done through special “affirmative” programmes to support rural hub schools, encourage resource-sharing between schools, or targeting resources and educational materials to schools with the highest concentration of students from needy families. Also, consider policies to improve the distribution of resources. For example, revise the norms for textbook distribution and replacement to accommodate changes in school enrolments due to internal migration from rural to urban areas and establish guidelines for ensuring pedagogical quality of Kazakh-language, Russian-language and other minority language textbooks.

More thorough quality monitoring and support mechanisms need to be put in place. Only by accurately measuring the quality of education in small rural schools can the policymakers get an idea of whether these institutions provide good value for money. In-depth assessments of student learning (using modern international assessment practices), supplemented with detailed monitoring of school financing and resource use, will allow education sector decision makers to properly analyse where systemic changes are required. After all, putting schools in every village that provide a sub-standard quality of education is not an effective use of scarce resources.

Sustain the efforts to improve school infrastructure

The scope for improvement of school infrastructure remains large, despite the considerable efforts undertaken in recent years. To address these infrastructure challenges, Kazakhstan will need to rely on both Republican-level and local financing, and to strategically expand the total volume of resources devoted to education. Given the steadily increasing birth-rate since 2002, much of it concentrated in a handful of regions, national action will continue to be required to ensure that resources are properly targeted to areas most in need. Regions like South Kazakhstan, and schools in rural areas elsewhere in the country's south, will continue to need Republican budget transfers to meet infrastructure demands. The precise balance of cost-sharing will need to be struck between central and local authorities, but the Government in Astana will likely need to play a greater role in equalising financial resources for education across the country's regions.

Budget for maintenance of school buildings

A more sustained effort is also needed to ensure that maintenance of school facilities and equipment is fully funded. Ad hoc programmes that finance school construction using central budget funds have the potential to leave local authorities responsible for unsustainable recurring costs for years to come. Ensuring that the responsible authorities have the means to maintain newly built schools and procured equipment, as well as address the physical conditions of older facilities, should be made an integral part of the annual budgeting process.

Box 3.4. Approaches to rural education

Kazakhstan is not unique in facing the challenge of providing quality education in large, rural areas, where villages are widely spaced and transportation options very limited due to distances and inadequate roads network. In this respect, Kazakhstan can learn from approaches taken by Canada, Australia, Sweden, Portugal and Poland, five OECD member countries which share the feature of low population density or extensive rural areas. As the literature suggests, one policy option to address low population density is school closure and consolidation (Ares Abalde, 2014). Through school consolidation, one or more schools are closed, and students from these institutions are transferred to other institutions which then increase the total number of students they enrol. Countries, regions and municipalities have promoted consolidation through various combinations of incentives, disincentives, and direct policy interventions (Howley et al., 2011). However, the effects of closure and consolidation vary by school size and region. Creating large schools in rural areas with low population density can greatly increase the costs of transporting students, but such additional costs may not be incurred in urban areas (Fox, 1981).

Box 3.4. Approaches to rural education (cont.)

In **Canada**, although more than 900 small rural community schools have been closed since 1966, a bus system complemented the closure policy. This system transported growing numbers of students for longer distances to larger schools, farther away from their communities. Small-class schools which remain operational today are often in remote areas where schools have very low enrolment – often much fewer than 100 students – and where a bus system is ineffective. The consolidation approach to rural education is limited by how far and how long policymakers can expect students to tolerate riding a school bus (Mulcahy, 2009)

Another approach suggested by the literature is collaboration with larger schools, which avoids the closure and consolidation of small-class schools. This collaboration focuses on sharing facilities of larger schools which tend to be better equipped than their smaller peers. Small-class schools often face difficulties in providing physical spaces, and costly learning tools beyond textbooks. Larger schools serve as a hub, and small-class schools serve as “feeder” or “satellite” schools, as evident in the approach used in **Queensland, Australia**. Students from small-class schools are transported to the larger schools on a set timetable. Sharing facilities allows students of small-class schools to benefit from a wider curriculum where an applied element is required in areas such as dance, physical education, ICT, and visual arts. This approach allows small-class schools to avoid closure (Ó Slatara and Morgan, 2004).

In contrast to the aforementioned approaches, a third approach has been adopted in **Sweden**, and focuses on a clustering arrangement. This arrangement arises when an agreed number of independent schools cooperate to the maximum degree, without loss of identity or independence (Ó Slatara and Morgan, 2004). Rural schools are clustered under a “Rektorsområde” or “Principal’s area” (Ó Slatara and Morgan, 2004). The purpose of clustering is to mitigate the problems faced by small-class schools, namely professional and social isolation. Principals interact to reduce administrative burdens stemming from resource management and procurement. The clustering approach also facilitates communication of best practices, without schools losing their individual identities.

In **Poland**, a specific programme “Mała szkoła” (“Small school”) was developed to enable continued operation of small rural schools. Under the programme, rural schools may be run by associations of parents, with a number of national obligatory norms listed to reduce costs. The list of these lifted norms and what should replace them is clearly stipulated in education laws. Among these lifted norms are the requirements to employ cleaners or separate kitchen staff. Instead, the programme allows for these functions to be performed by parents on a voluntary basis, which significantly reduces the per student costs. Such voluntary engagement of parents also strengthens links between the school and the community, and brings additional benefit in cases of conflicts or of poorly performing students. Moreover, education laws define financial responsibilities of local governments to the schools operating under this programme in such a way, that the funds transferred by the local government to the school are generally sufficient to cover its (reduced) costs, while being at the same time much lower than the costs of maintaining the school prior to its entry into the small school programme. This ensures that local governments are interested in participating in this programme. In practice, if the village community considers their school to be an important asset for their future, they can organise themselves and in this way take over the management of the school. Moreover, they will often benefit from the direct support of their local government, for example the lawyers employed by the local government may support the parents in establishing their association, help adopt its statutes in conformity to the laws and finally help register it.

Box 3.4. Approaches to rural education (cont.)

In **Portugal**, about 2 500 schools closed between 2005 and 2008 compared with 1000 in the previous 10 years. Rural areas were dominated by small schools with poor facilities, while urban areas had overcrowded schools with double shift education. Research showed inefficiencies, lower academic performance in smaller schools, higher teacher turnover and variable quality in rural areas. The government determined that small schools with grade repetition rates higher than the national average were to be closed during 2005/06 and clusters of schools should be created. The reorganisation and redeployment programme had several instrumental features: (i) there was a clear central vision about what type of schools should replace the closing schools, which were larger school centres with a minimum of 150 students at more than one level and full-day school with extra-curricular activities; (ii) it was recognised that parents needed to be convinced that the outcomes for them and their children would be better and incentives, including free transportation, were provided; (iii) municipalities needed incentives to invest in new provision; and (iv) the consultation and decision-making processes needed to be applied carefully as previous attempts to close schools had failed. In general, the reorganisation process brought about innovations and improved efficiency of the schools, reduced isolation of teachers, improved socialisation of underprivileged or isolated pupils, and fostered a collaborative approach between the Ministry of Education (centrally and regionally), municipalities, schools and other stakeholders (Ares Abalde, 2014).

Sources: Fox, W. F. (1981), "Reviewing Economies of Size in Education", *Journal of Education Finance*, Vol. 6, No. 3, University of Illinois Press, Champaign pp. 273-296; Mulcahy, D. M. (2009), "Developing Government Policies for Successful Rural Education in Canada", in Lyons, T., J. Choi and G. McPhan (eds.), *Innovation for Equity in Rural Education. Symposium Proceedings*, University of New England, 11-14 February, Armidale; Ares Abalde, M. (2014), "School Size Policies: A Literature Review", <http://dx.doi.org/10.1787/5jxt472ddkjl-en>; Ó Slatara, T. and M. Morgan (2004), "The Future of Small Schools and Teaching Principalship in Ireland", *Interim Report February 2004*, www.ippn.ie/index.php?option=com_mtree&task=att_download&link_id=2588&cf_id=24.

Improve the management of human resources to raise the quality of teachers and school leaders

Develop and widely disseminate standards for teachers and school leaders

Kazakhstan needs to have a basic reference of what good teaching and good school leadership mean. As articulated previously by the OECD (OECD, 2013c), this means establishing a clear set of coherent teaching and school leadership standards that signal to teachers and school leaders and to society as a whole the core knowledge, skills and values associated with effective teaching at different stages of a teaching career and associated with effective school leadership. Clear, well-structured and widely supported professional standards for teachers can be a powerful mechanism for aligning the various elements involved in developing teachers' competencies (OECD, 2005). The same applies to school leadership standards in relation to school leadership.

Teaching and school leadership standards should contain quality criteria or indicators for professional teaching and school leadership practice and should be applied in developing teacher education curricula, evaluating individual performance, establishing career structures and guiding professional development (OECD, 2005). Teachers' and school leaders' practices and the competencies that they need to be effective should reflect the student learning objectives that the school system is aiming to achieve. Teaching and school leadership standards need to be informed by research and express the sophistication and complexity of what effective teachers and school leaders are expected

to know and be able to do. They should also express different levels of performance and responsibilities expected at different stages of the teaching and school leadership career. For school leadership, an implication would be to reinforce instructional leadership vis-à-vis administrative leadership.

In the development of standards, Kazakhstan should consider involving not only governmental authorities at all levels but also professional associations of principals and teachers, groups of educational administrators, researchers, and representatives from teacher education institutions in order to reflect different perspectives and ensure a common understanding and legitimate the process. The development of standards is often a participative process; it can begin as a proposal from the Ministry of Education that later goes through successive rounds of consultation and validation as in Chile or Québec (Canada); or are initiated by professional and academic associations, who then lead the process of consultation and validation with a wider group of actors, which then leads to subsequent adoption by the educational authorities as in the United States and British Columbia (Canada) (CEPPE, 2013). In Australia, standards were also piloted to test their authenticity, utility and added value before its national launch (Dinham et al., 2013). The consultation processes can also include a review of current staffing norms (“Standard Qualification Characteristics of Teaching Positions and Equated Employees”) and the current roles of teachers and school leaders in the Kazakh system. There is also a need to ensure appropriate feedback mechanisms: following implementation, standards can have periodical revisions to ensure that these remain aligned with other elements of the system, and that they are useful in the promotion of teacher and school leader professionalism.

Kazakhstan should also envisage measures to help teachers and school leaders embed these standards in their regular practice. This “making sense” of standards by teachers and school leaders is essential to transform their practice. Extensive socialisation of standards for teachers can be done at several stages of teachers’ careers (NBRC, 2010): (i) initial teacher education so that new teachers already have a clear understanding of what is expected from them; (ii) induction and mentoring programmes to ease the transition between initial education and school-level practice; and (iii) in-service teachers must receive training on the use of standards and their implications for classroom practice.

Raise the bar to enter the teaching profession and school leadership

Overall, Kazakhstan is not facing shortages and, in some regions, has an oversupply of teachers. This is an opportunity to be more selective about those who are employed and those who enter the profession and initial teacher education. Entry into preparation programmes can be much more selective to ensure only high-quality graduates fill the available teaching posts. Barber and Mourshed (2007) found that the top-performing education systems recruit their teachers from the top third of each secondary graduates’ cohort (top 5% in Korea, 10% in Finland and 30% in Singapore and Japan). Criteria to enter initial teacher education can be strengthened to include interviews and tests to assess the aptitude and motivation of candidates. The number of places in initial teacher education could also be limited by limiting the number of accredited programmes (by raising quality standards for accreditation) and making access to these more demanding. This would reduce the number of graduates of initial teacher education to levels closer to the needs of the school system and is likely to improve their quality. Initiatives at the starting point of the teacher’s career can also go alongside stronger requirements to enter the profession. A poor selection decision can result in up to 40 years of poor teaching and so it is essential to

design selection procedures that assess the set of skills and attributes that effective teachers should possess.

Recruitment procedures for school leaders should also place greater emphasis on leadership skills rather than on knowledge of current norms. While the selection of principals has traditionally been linked to their length of service as a teacher, most OECD countries have recognised the inadequacy of seniority as a major selection criterion. In many countries, there is a new emphasis on breaking hierarchical models of leadership to allow faster emergence of younger dynamic personnel into leadership positions. To increase the objectiveness of the selection of school principals, Kazakhstan could consider establishing clear criteria to guide the selection of school leaders in alignment with school leadership standards. In Victoria (Australia), members of the selection panel are given detailed guidelines outlining the most important criteria for selection and explaining steps to prepare for and conduct the interviews (OECD, 2008b).

Rethink approaches to initial teacher education

Initial teacher education has an important role to play in ensuring that a teaching career is open to a wide range of well-qualified people, and that emerging needs in the school system are responded to effectively. A priority should be to improve the quality of initial teacher education. This requires strong accreditation procedures ensuring that teacher education institutions are evaluated on an ongoing basis and that the teacher education sector as a whole is subject to periodic review and debate. It is important to target public resources into the development of high-quality teacher education programmes, including greater funding to specialisations in greater need in the school system. In order to encourage innovation and a diversity of approaches in teacher education, accreditation criteria should focus on the outcomes of programmes rather than on their inputs, curriculum and processes (OECD, 2005). As argued earlier, in Kazakhstan there is probably room to reduce the number of accredited teacher education programmes. Also, a higher education qualification should become the minimum requirement for entering the teaching profession at all educational levels, implying that initial teacher education programmes at the secondary or post-secondary non-tertiary levels should be discontinued. This will improve the overall quality of initial teacher education and its status.

As explained earlier, there is also room for initial teacher education to become more selective. The current system of unrestricted entry to initial teacher education for students who passed the UNT leads teacher education resources to be spread too thin. Potentially useful initiatives include: providing more information and counselling to prospective teacher trainees so that better informed enrolment decisions are made; procedures that try to assess whether the individuals wanting to become teachers have the necessary motivation, skills, knowledge and personal qualities (specific assessments); incentive schemes to recruit candidates with high-level competencies (such as higher education grants); and flexible programme structures that provide students with school experience early in the course, and opportunities to move into other courses if their motivation towards teaching changes.

Another priority should be to grant the accredited teacher education institutions with greater autonomy to shape their programmes, including the introduction of entrance selection mechanisms, the design of part of the curriculum and the creation of multi-specialisations programmes. This allows a greater responsiveness to the needs of

the school system. For instance, an increase in the common components of teacher preparation programmes for different levels of education and specialisations would increase opportunities for working in different educational levels and specialisations as teacher demand and career interests change. Teacher education programmes, in particular, should be less specialised and allow the graduate to teach in a wider range of specialisms. The reduction in the number of teacher specialisations is likely to increase the efficiency of the school system by enabling graduates to teach in a wider range of specialisms and schools to better accommodate their needs. This means that Kazakhstan should abandon the Soviet concept of “one subject, one teacher” and embrace an initial teacher education structure of common components and few specialisations. Finally, the role of field experiences in schools could be reinforced. These should happen earlier in teacher education, and be framed to provide a broad experience of what it means to be a professional teacher, including actual class teaching, counselling and guidance, curriculum and school development planning, research and evaluation and collaboration with parents and external partners (OECD, 2005).

Enhance the functioning of the teacher labour market

Regional imbalances in teacher supply and demand relate, partly, to the limited mobility of teachers across regions of the country. The lack of mobility means that teacher shortages in some regions of the country are paralleled by oversupply in others. As a result, providing incentives for greater mobility and removing barriers are important policy responses. One option is the provision of incentives to attract teachers to specific *rayons* or *oblasts*. While the current provisions for teacher employment provide for extra incentives for working in rural areas, the system of norms is not flexible enough to grant *rayons* and specific schools the ability to devise specific incentives to alleviate potential recruitment problems. This calls for greater flexibility in the system of norms, as argued in other sections of this report.

Incentives need to be large enough to make a difference and be combined with appropriate support and development to effectively improve teacher quality and student achievement in disadvantaged schools. Most OECD countries offer incentives, such as additional yearly or one-off bonuses, as a reward for teaching in a disadvantaged and/or remote area (OECD, 2012). In Japan, officials in the prefectural offices allocate good teachers to schools with weak teaching bodies to make sure that all students have equally capable teachers. Low socio-economic status students in Korea are more likely than high socio-economic status students to be taught by high quality mathematics teachers. Multiple incentives are offered to candidates who work in high need schools, including additional compensation, smaller class size, less instructional time, additional credit towards future promotion to administrative positions, and the ability to choose the next school where to work in (OECD, 2012).

Another option is to improve the information flows in the teacher labour market. The development of transparent and prompt systems to close the information gaps between teachers and schools is essential for an effective functioning of the teacher labour market, especially in a country such as Kazakhstan where schools are more directly involved in teacher recruitment and selection. Possible strategies are requiring all teaching vacancies to be posted, creating websites where the information is centralised or establishing a network of agencies to co-ordinate and foster recruitment activities (OECD, 2005). This would also have the advantage of improve the transparency of teacher recruitment at the

school level. Another way of expanding the potential supply pool of teachers, to address potential shortages such as in mathematics, is through an increased mobility of teachers across educational levels, something that can be achieved by ensuring that different teacher education programmes are less specialised (as suggested above), and by providing more opportunities for retraining and upgrading teachers' skills.

The successful decentralisation of personnel management, and school decision-making more generally, requires that central and regional authorities play a strong role in monitoring the adequate and equitable distribution of teacher resources throughout the country. To reduce the costs of the mismatch and take advantage of the current overall oversupply, Kazakhstan could undertake a comprehensive study of the supply of and demand for teachers and other education professionals. This study should estimate the demand for teachers and other education professionals per role and specialisation. In the United Kingdom a teacher workforce planning exercise is carried out annually covering geographical areas, education sectors and curriculum specialisations to ensure an appropriate supply of high-quality teachers (Department of Education and Skills, 2012).

Reconceptualise teacher employment and discontinue the stavka system

Making the work of teachers more effective in Kazakhstan schools necessitates a whole new concept of teacher employment. As explained in OECD (2005), teachers are now expected to have much broader roles. Some examples of areas of broadened teacher responsibility are: initiating and managing learning processes; responding effectively to the learning needs of individual learners; integrating formative and summative assessment; teaching in multicultural classrooms; introducing new cross-curricular emphases; integrating students with special needs; working and planning in teams; evaluation and systematic improvement planning; ICT use in teaching and administration; projects between schools; management and shared leadership; providing professional advice to parents; and building community partnerships for learning (OECD, 2005). These broaden responsibilities are simply not compatible with a conception of teacher employment associated mostly with teaching as a paid activity (the *stavka* system). Clearly, Kazakhstan needs to move to employment under a workload system, more typical of OECD countries, whereby teachers work a specified number of hours per week (e.g. 40 hours), a proportion of which are devoted to teaching. Such conception of teacher employment recognises that teachers need time for engaging in a range of other tasks, including the adequate preparation of lessons. This may contribute to improve teacher professionalism, making the profession more attractive and reducing the number of teachers with unreasonably high teaching loads. This reform will necessitate considerable resources but should be a priority for the application of extra resources devoted to education and could benefit from the overall reduction of teacher numbers.

This new concept of teacher employment also grants an opportunity for schools to diversify the roles and tasks of their teachers in such a way their needs are better met. For instance, if it proves difficult to reduce the number of teachers, one possible alternative is to use the extra teacher capacity to implement strategies to individually support students who are falling behind, as recommended earlier. Research in the United States suggests this is an effective strategy. The *Success for all Program*, in the United States, has been identified by The Brookings Institute as one of five social programmes that work, with daily 90-minute reading classes boosting reading scores in high-poverty schools by an average 27% of a standard deviation, or 25-30% of a grade level after three years of the programme

(Haskins and Margolis, 2014; Borman et al., 2007; Fryer, 2014). A similar intensive tutoring programme was introduced in poor-performing schools in Houston, and it boosted primary school students' mathematics scores by 30% of a standard deviation. Children in the early primary grades in Kazakhstan spend 25% fewer hours in school, as compared with the OECD average. Increasing the number of instructional hours by including intensive tutoring for poor performing students in the early grades could both improve children's performance and utilise teachers who might otherwise be under-employed, improving their professionalism.

Regarding the career structure, the introduction of a formal probationary process can provide an opportunity for both new teachers and their employers to assess whether teaching is the right career for them. The satisfactory completion of a probationary period of one to two years teaching should be mandatory before full certification or a permanent teaching post is awarded. This should go alongside systematic mentoring programmes in Kazakh schools. This would give beginning teachers the opportunity to work in a stable and well-supported school environment. The successful completion of probation should be acknowledged as a major step in the teaching career and tied to teacher attestation (see Chapter 4).

Improve teacher compensation

Further financial investment in the school system, as suggested earlier, needs to give great priority to improving the attractiveness of teaching and to ensuring teachers have adequate incentives to be effective in their daily practice. An initial step is reconceptualising teacher employment on the basis of a fixed weekly workload, as suggested above. This major reform, which will recognise the broader professionalism of teachers, is likely to require a substantial investment. The subsequent step is to assess the room to improve overall levels of teacher compensation and rethink its structure.

It is clear that current basic salaries of Kazakh teachers are low in contrast to the greater generosity of extra payments for additional tasks, extra qualifications, career advancement and "higher-level" professional development. The workload system for teacher employment will allow at least some of the resources spent on "additional tasks" to become part of teachers' basic salaries. But this might not be enough to make salaries of beginning teachers attractive. It might be worth targeting salary increases in the teaching profession to their basic component so salaries become more competitive in the early stages of the career. This is in recognition that extra payments for career advancement and "higher-level" professional development are quite significant. Better basic salaries for teachers will help improve the status of the profession, attract better candidates for teaching, and make teaching more appealing to males. The strategy would be better paid but possibly fewer teachers overall.

Compensating teachers on the basis of a full workload also improves the fairness of teacher compensation. This is because the *stavka* system has the potential to disadvantage teachers whose working environment does not permit additional teaching hours and, therefore, better income (OECD, 2014b). In addition, it is important that financial bonuses for teachers (as those provided through the per-capita funding scheme) are linked to a more comprehensive set of criteria and go beyond student achievement data such as results in the UNT and in Olympiads.

Similarly, the compensation for school leaders needs to be improved in order to ensure that it is attractive enough for high-quality candidates and that it provides a clear-cut salary premium *vis-à-vis* teachers. School leaders could benefit from their own career structure and an incentive scheme to reward their performance. The removal of the 9-hour cap for teaching and other activities for school leaders could also facilitate a more efficient allocation of time. It could enable the principal to create teams more adjusted to the school's needs with fewer school deputies but with full-time responsibilities in large schools and fewer leadership responsibilities in small ones.

Notes

1. This figure excludes South Kazakhstan, for which data was not readily available.
2. Not all small-class schools are located in rural areas and not all rural schools are small-class ones. A school is considered rural if located in such an area. A school with at least 180 students located in a rural area is considered a rural school but not a small-class one. A school with less than 180 students located in an urban area is considered a small-class school but not a rural one.
3. Subsequently to the visit by the Review Team, the roll-out of the per student funding formula was postponed to 2018 and limited to grades 10 and 11, as a result of pitfalls identified through the evaluation of the pilot. The analysis in this report concerns the plans for the introduction of the per student funding formula as of April 2014, when the Review Team visited Kazakhstan.
4. The Review Team had access to the dataset of the number of deputies per school in the school year 2012-13. The dataset includes 7 416 schools, although data are missing for 846 schools (about 5%). The total number of deputies was 17 998, which means that on average each school had one principal and 2.74 deputies. However, differences in the number of deputies per school were stark: 0 (952 schools), 1 (594 schools), 2 (2 086 schools), 3 (879 schools), 4 (761 schools), 5 (641 schools), 6 (380 schools), 7 (175 schools), 8 (77 schools) and 9 (25 schools). The Review Team was told that the accuracy of the dataset was roughly 80%. The number of deputies might be overestimated in small schools where the principalship is also formally recognised as a deputy position, or underestimated in schools where deputies hold categories not formally recognised as such (see Chapter 4). It should be noted that, according to existing regulations, schools with fewer than 6 classes cannot have deputies (for further information see Table 4.A1.1).
5. The number of permutations can be estimated as follows: 18 coefficients of full-time equivalent (FTE) teachers per student times 3 environmental conditions (regular, environmental disaster zones, radiation risk zones), times 2 specialisation programmes (regular, with in-depth teaching of specific subjects), times 2 school types (regular, residential), resulting in over 200 different allocation standards.
6. As explained earlier, subsequently to the visit by the Review Team, it was decided to postpone the full roll-out to 2018.
7. Murillo and Roman's study of 15 Latin American countries found that, with the exception of Cuba, basic infrastructure and services (water, electricity, sewage), didactic facilities (sport facilities, laboratories, libraries) and the number of books in libraries and computers in the school affects student performance. This finding holds even after controlling for the family's socio-economic and cultural characteristics, the socio-economic characteristics of the area and the country's level of development (Murillo and Roman, 2011).
8. A similar feasibility study carried out in the Republic of Moldova in 2010 concluded that as many as 29% of the country's rural schools could be closed in response to declining enrolment without impairing access.

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ANNEX 3.A1

The new school funding model

The new school funding model divides school budgets into two parts: the educational process, financed through a grant from the central government, and the educational environment, financed from own revenues of *rayons* and *oblasts*. Another relevant difference is that the allocation is based on the number of students in the educational process component whilst on the actual needs of the schools in the educational environment one. Table 3.A1.1 provides further detail on the types of expenditures covered by each component. Capital expenditures are not included in the new school funding model and are financed through the national and local budgets in accordance with other strategies and policies.

Table 3.A1.1. **Components of the new school funding model**

	Educational process	Educational environment/setting
Level of government responsible	Central government	Local governments
Basis for the calculation	Number of students	Actual needs
Type of expenditures	Staff compensation Employer's contributions Expenses on health improvement benefits Teaching expenses (additional textbooks, instructional packages, teaching materials and visual aids) An incentive component	Utilities and communication services Building and equipment maintenance services and minor repairs Transportation services and student meals and other support Provision of residential care at schools Fund for Universal Compulsory Secondary Education Other services (financial services, tax and other obligatory payments to the budget)

Source: Republic of Kazakhstan (2013), *Order of Minister of Education and Science of the Republic of Kazakhstan dated October 30, 2013, Number 440: Methodology for Per Capita Standard Funding of Secondary Education*, Republic of Kazakhstan, Astana.

Factors considered in the educational process component

The formula of the educational process component takes into account some basic characteristics of schools to determine the number of full-time equivalent teachers per student. The formula takes into consideration (see Table 3.A1.2):

- Levels of education provided: pre-primary, primary, lower secondary, upper secondary, to take account of distinct instructional loads.
- Normative class size: 24 students in urban schools and 20 in rural schools.
- Type of schooling: in schools or home-schooling to reflect differences in instructional time.

Dividing the average weekly number of classes by the weekly teaching load and by the normative class size gives the coefficient reflecting the number of full time equivalent teachers (FTE, or *Stavka* in Russian) per student for each group of students. The coefficients for pre-primary schools are significantly lower than coefficients for schools, which is mainly due to much higher teaching load of pre-primary school teachers. Moreover coefficients in rural schools are higher than in urban schools, reflecting smaller normative class sizes.

Table 3.A1.2. **Factors considered in the calculation of full time equivalent teachers**

Education level	Weekly teaching load	Average weekly number of classes		FTE teacher per student	
		Schools	Home teaching	Rural school	Urban school
Pre-primary	24	22		0.0458	0.0382
Primary	18	34	8	0.0944	0.0787
Lower secondary	18	44	10	0.1222	0.1019
Primary and secondary	18	46	12	0.1278	0.1065

Source: Republic of Kazakhstan (2013), Order of Minister of Education and Science of the Republic of Kazakhstan dated October 30, 2013, Number 440: *Methodology for Per Capita Standard Funding of Secondary Education*, Republic of Kazakhstan, Astana.

The formula also takes into account other legislation that influences school expenditures to be covered by the educational process component. The additional factors to be accounted for make the formula considerably more complex and also blur the per-student character of the formula as many factors are related to the characteristics of the teacher workforce.

- Special treatment of staff working in areas of environmental degradation (50% salary increase and 12 calendar days of additional annual leave in disaster zones, 100% salary increase and 14 calendar days of additional annual leave in zones with risk of radiation).
- School location (25% salary increase in rural schools).
- Boarding schools (10% salary increase).
- Additional allowances for teacher qualifications (6% of all teachers).

The formula also takes into account an increase of allocation for additional payments and allowances, for the standard teaching programme and for teaching programmes with in-depth study of particular subjects. All these values are reflected in appropriate coefficients, to be taken into account to assess required salary allocation. Finally, after multiplying the number of FTE teachers per student (listed in Table 3.A1.2) by the base salary, one obtains the basic teacher salary standard per student. Then, additional factors are taken into consideration in order to calculate the per student standard of funding per year:

- Multiplication by 12, because the base salary is defined per month, and per student amount is defined per year;
- Multiplication by 1.1, to reflect taxes, social contribution and pension contribution;
- Increase the amount by 55% to reflect the salary costs of management, administrative, support and technical staff;
- Include other teaching expenses (fixed sum established yearly by the Government, equal to KZT 1 731 per month in 2013).

The allocation for every school is thus determined by multiplying the number of students enrolled in the school, and belonging to each of the identified groups of students, by the relevant per student standard of funding per year.

There is an additional allocation rule, which is designed to prevent overcrowding of schools. The maximum class size in Kazakh secondary schools is set to 25 since 2011. In exceptional cases, when the demand exceeds the available places, some classes are larger, though the formula foresees a reduction of per capita standard of funding per year for students above the maximum class size (by 4%, 5% and 6% for each student above 25, 30 and 40 students in a class respectively).

The formula to distribute resources for the educational process also contains an additional component, which is purported to pay bonuses to school staff based on their performance as well as to cover other needs of schools related to the educational process. Full detail of the indicators taken into consideration to determine the size of this component per school and its distribution within schools is available in a handbook titled “Methodological guidance on the implementation of the per capita normative financing” edited by the Financial Centre. Different indicators apply to the teachers, school leaders, administrative staff, and support personnel.

ANNEX 3.A2

The per student funding formula in Lithuania and Poland

The per student funding formulas used in Lithuania and Poland provide clear contrasting examples of two ways of allocating resources to schools (Levačić, 2011; Herczyński, 2011). The formulas are described below (for a succinct comparative review of both approaches in costing education functions see Herczyński, 2009). Table 3.A2.1 provides a summary of the key elements of the formulas in Lithuania and Poland.

The school funding formula in Lithuania

The Lithuanian allocation formula, known in the country as *student basket*, applies to all 60 municipalities. It governs the allocation of a specific grant only for education process, which includes teacher, administrative and professional staff salaries (but not salaries of technical staff), textbooks, teaching materials and aids, teacher in-service training, pedagogical and psychological services, student professional guidance and cognitive development. The other part of education expenditures, called education environment, is financed from general revenues of local governments and is not included in the student basket. Education environment includes salaries of technical and administrative staff, utilities expenditures, school maintenance, and small school purchases. It is important to note that both parts of the school budget include some salaries and some non-salary expenditures.

The grants are assessed on a per school basis and then summed up over all the schools in a given municipality. The grant is transferred to the municipality as a whole, and the municipality is also informed about how much funds were assessed for each school. However, the municipality has the right to reallocate up to 5% of the grant between schools. This is a very strong mechanism. For instance, a 2% reallocation from a large urban school to a small rural school may provide almost a doubling of its budget.

The basic per student amount (called *student basket*) for a student of an urban school attending grades 5 to 8 is defined on the basis of curriculum standards assuming that the class size is 25 students. As teacher salaries increase, or curriculum changes, the formula allows for automated recalculation of the basic per student amount. This amount includes: (i) Teacher salaries (based on curriculum and normative class sizes), comprising 85% of the student basket; (ii) School management (based on school size), comprising 9% of the student basket; and (iii) Textbooks, teacher qualifications, teaching materials and other, comprising the remaining 6% of the student basket.

Further, the formula contains well over a hundred coefficients, applied to different groups of students to obtain their per student amounts. These coefficients reflect different cost differentials for different groups of students. Among them there are: (i) Coefficients for grade levels (initial, basic, secondary), reflecting different teaching load; (ii) Coefficients for different normative class sizes (10 students for very small schools, 15 for small schools, 20 for medium schools and 25 for urban schools), reflecting different unit costs; and (iii) Coefficients for different student characteristics, including special education, students learning at home and adult students, as well as for pre-primary students and for students involved in informal education. As a result, the formula seems exceedingly complicated.

The school funding formula in Poland

The Polish allocation formula, known in the country as *algorithm*, applies to an education grant from the central budget to almost 3 000 local governments, which include about 2 500 *gminas* (first tier), responsible for primary and lower secondary schools, 380 *powiats* (second tier), responsible for secondary education (both general academic and vocational) and for non-school education establishments (centres of vocational excellence, centres for special needs students, pedagogical and psychological services, in-service teacher training and similar), and to 16 self-governing *voivodships* (third tier), responsible for specific schools of regional or national importance, and for a range of regional education institutions (regional teacher training facilities, teacher colleges, pedagogical libraries). The same formula serves all three tiers of local government and all education functions performed by them. The formula allocates an education grant to each local government proportionally to the number of *weighted students*. The total amount of funds available for the grant is divided by the total number of weighted students in the country. This is summed up over all local governments and the resulting amount, called the *allocation standard*, is the appropriate per student amount. The education grant received by the municipality results from multiplying the number of weighted students in the municipality by the allocation standard.

Table 3.A2.1. **Comparison of key elements of the funding formulas in Lithuania and Poland**

Issue	Lithuania	Poland
Relation with the total pool of funds for education grant	Total pool is the result of application of the formula	Total pool serves as input for calculation of basic per student amount
Impact of increase of teacher salaries	Automated increase of basic per student amount and of total pool	Requires negotiations
Impact of increase of curriculum	Automated increase of basic per student amount and of total pool	Requires negotiations
Impact of increases of fuel prices	No impact	Requires negotiations
Impact of decrease of student numbers	If all other parameters are unchanged, total pool of funds decreases	Automated increase of basic per student amount
Impact of school consolidation on the amount received by the municipality	Potential decrease (if school size increases)	No impact
Impact of increase of coefficients for special needs students on allocation	Increase of the total pool and of the relevant allocations to municipalities	Shift of funds away from mainstream schools to schools serving special needs students

Sources: Levačić, R. (2011), "Per capita Financing of General Education in Poland: A Case Study", in Alonso J. D. and A. Sanchez (eds), *Reforming Education Finance in Transition Countries: Six Case Studies in Per capita Financing Systems*, World Bank, Washington, DC; and Herczyński, J. (2011), Student Basket Reform in Lithuania: Fine-Tuning Central and Local Financing of Education, in Alonso J.D. and A. Sanchez (eds.), *Reforming Education Finance in Transition Countries: Six Case Studies in Per capita Financing Systems*, World Bank, Washington, DC.

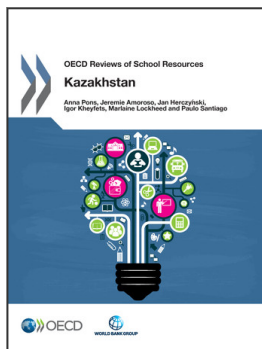
The number of weighted students is obtained through a formula that allocates additional coefficients (weights) to specific groups of students taking into account the extra costs associated with their needs. The formula contains weights for up to 41 specifications including, among others: (i) weight for students of rural schools, equal 0.38 (meaning that each student of a rural school is treated by the formula as 138% of an urban school student), reflecting higher teaching costs in small rural schools; (ii) a series of weights for special needs students, from 0.8 to 9.5 (depending on the type and severity of the special need), reflecting small class sizes and additional teachers employed; (iii) weight for lower secondary schools, equal 0.04, weight for upper secondary school, equal 0.08, and weight for vocational schools, equal 0.15, reflecting different curricula; and (iv) a series of weights for art and music schools, from 0.92 to 3.42, depending on arts programme and reflecting different curricula.

ANNEX 3.A3

*The distribution of teachers across categories*Table 3.A3.1. **Distribution of teachers across categories in urban and rural areas, by location, 2010**

Region	Urban				Rural			
	Highest Category	First Category	Second Category	No Category	Highest Category	First Category	Second Category	No Category
Akmola	24.1	32.0	26.6	17.3	8.8	28.8	33.6	28.9
Aktobe	18.5	28.1	33.0	20.4	8.0	25.6	31.6	34.8
Almaty	21.0	33.1	24.1	21.8	12.9	32.7	28.1	26.3
Atyrau	16.7	43.4	22.0	17.9	9.5	36.4	29.4	24.6
East Kazakhstan	24.2	30.3	27.2	18.3	9.6	34.2	30.1	26.1
Zhambyl	25.6	25.9	23.9	24.5	15.8	26.0	31.1	27.1
West Kazakhstan	15.7	36.3	29.7	18.3	7.4	35.6	31.3	25.7
Karaganda	21.6	30.8	28.1	19.5	11.9	36.1	27.5	24.6
Kostanai	23.6	29.5	25.6	21.2	9.5	26.6	30.5	33.3
Kyzylorda	5.9	35.6	31.1	27.5	2.0	33.1	34.0	30.9
Mangystau	12.6	28.8	30.0	28.6	6.6	31.5	29.8	32.1
Pavlodar	32.4	30.4	22.6	14.6	11.2	31.2	28.8	28.8
North Kazakhstan	29.1	31.5	22.4	17.0	10.5	32.0	29.7	27.9
South Kazakhstan	21.2	26.6	29.9	22.4	11.3	31.1	34.9	22.6
Astana City	28.9	26.0	25.9	19.3	-	-	-	-
Almaty City	28.8	25.1	26.6	19.5	-	-	-	-
Country average	22.6	29.6	27.2	20.6	10.4	31.4	31.3	26.9

Source: OECD (2014b), *Reviews of National Policies for Education: Secondary Education in Kazakhstan*, <http://dx.doi.org/10.1787/9789264205208-en>.



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