Reviews of National Policies for Education

Higher Education in Kazakhstan

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Foreword

Significant progress has been made in the reform of higher education in Kazakhstan since independence and the beginning of the transition to a democratic society and market economy. Changes have occurred in the system of education with a new structure of tertiary education based on the Bologna process; the establishment of private institutions and a wider range of tertiary education opportunities; education provision is being extended to a 12 year compulsory cycle; the implementation of a Unified National Test for those entering tertiary education; use of technology; and a wide range of programmes to increase access to education for rural and lower income populations. This joint OECD and World Bank report provides an overview of the impressive forward thinking and steadfast application of education reform in Kazakhstan and offers advice on issues of access, equity, quality, and decentralisation of management and financing responsibilities.

Against the background report prepared by the Kazakh authorities and information supplied in meetings in the course of site visits (Almaty, Astana, Karaganda and Pavlodar), the examiners' report gives an analysis of the post-secondary education sector within the economic, social and political context of Kazakhstan. The final synthesis chapter brings together specific recommendations and sets out how policies can and should be addressed system wide, linked to priority issues of access and equity, student evaluation and efficient use of resources.

This review of education policy was undertaken within the framework of the programme of work of the OECD Directorate for Education in partnership with the World Bank. The financing for the review was provided within the framework of the Joint Economic Research Programme conducted by the World Bank and the government of Kazakhstan.

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Chapter 1: Context and Overview

This chapter introduces the current context of higher education in the Republic of Kazakhstan. It gives an overview of the education system as a whole and describes the higher education system, including aspects such as student numbers, teaching, funding, quality assurance, internationalisation and research. The summary concludes with a brief description of the strong points of the higher education system and outlines areas which have been identified by the review team as offering scope for improvement.

The setting for the review

Kazakhstan is a country the size of Western Europe, with a population of over 15 million. This population is quite well educated, as Table 1.1 indicates. This is a positive legacy from the former USSR; other inheritances are less positive. Great efforts have been made in recent years to reform Kazakhstan's education system to meet the needs of a modern competitive economy. This review considers how far these efforts have succeeded, and what more still needs to be done, in the higher or tertiary education sphere. The report, therefore, focuses on education at the stage – or level – beyond secondary, including higher professional (vocational) education, but comments on other aspects, notably secondary general and vocational education, where it is necessary and relevant to do so.

Table 1.1 **Educational and professional level of the population aged 15 and older (from 1999 census)**

	Numbers of people (thousands)		Numbers educated to the following levels, per 1 000 people aged 15 and older					
	Total population	Of which, aged 15 and older	Higher vocational	Incomplete higher	Primary and secondary vocational	Secondary general	Basic general	Primary general
Totals	14 953	10 677	126	17	224	366	180	75
Of which:								
Men	7 202	5 024	120	18	199	400	197	59
Women	7 751	5 653	132	16	246	335	164	88
Urban	8 377	6 268	164	24	264	315	160	63
Rural	6 576	4 409	72	8	167	438	208	91

Source: NCEQA (2006), *Kazakhstan's System of Education in Figures 2005*, National Centre for Educational Quality Assessment (NCEQA), Astana.

Work began in 1991 to adapt the education system to new social and political conditions, against a background of severe economic crisis following the break up of the Soviet Union. Between 1991 and 1995, real GDP fell by 39% and exports collapsed (World Bank, 2005b), leaving a large part of the labour force – 30% by 2004-05 (Agency of the Republic of Kazakhstan on Statistics, 2005a) – reliant on agricultural work. The economic crisis affected all areas of society and levels of education, including the higher education system. Priority for education was declared government policy, but not reflected in funding decisions. Public spending on education as a percentage of GDP fell from 6 % in 1990 to 3.5 % in 2000 (Asian Development Bank, 2001). The education share of the national budget of the Republic of Kazakhstan fell from 8.1 % in 1993 and 6.3 % in 1998 to 4% in 1999, by which time it met only 55% of requirement (Usenova, 1999). Meanwhile, between 1995 and 2000, legal and administrative steps were taken to modernise the higher education system, renew its content, decentralise management and funding of the education system, and give academic institutions more budgetary freedoms.

Since 2000, the economy has been staging a vigorous recovery, led by the oil and mining sectors, and financial indicators are now strong. However, the country's manufacturing base remains weak. Social indicators are improving, but health indicators are not good, with lower life expectancy

(particularly for men) than the CIS (Commonwealth of Independent States) average. The country faces major health threatening environmental challenges, relating to availability of safe water, air pollution and a legacy of mismanaging natural resources. And although Kazakhstan has achieved near universal primary education, 8.4% of its adult population failed to complete secondary education (Agency of the Republic of Kazakhstan on Statistics, 2005b). The greatest disadvantages are typically experienced by poorer families living in rural areas. In these circumstances, Kazakhstan's new oil wealth is more likely to increase income and other inequalities than to narrow them, unless the government adopts effective targeted policies to build up the country's human capital and ensure that the benefits of prosperity spread beyond those directly involved in the oil related industries to reach all social groups.

The competitiveness challenge

President Nazarbayev announced on 1 March 2006 his aim that Kazakhstan should become one of the world's 50 most competitive countries by the year 2015. This aim has important implications in the policy environment and has begun to influence policy makers and practitioners in the country. It is a challenging aspiration. On the World Economic Forum (WEF) Global Competitiveness Index (GCI) 2006 (World Economic Forum, 2006), Kazakhstan is at 56, not far from the top 50, but has slipped five places since last year (see Table 1.2).

The WEF GCI is based on nine "pillars". One pillar specifically relates to higher education, and covers quantity of education (enrolment ratios in secondary and tertiary education); quality of education (quality of the educational system, quality of math and science education, quality of management schools); and on-the-job training (local availability of specialised research and training services, and extent of staff training). On higher education Kazakhstan ranked 51st. All the remaining eight pillars relate in some way to countries' human capital. The most relevant to this review is innovation, which covers the quality of scientific research institutions, university/industry research collaboration and capacity for innovation. On this, Kazakhstan was ranked 70th. The WEF 2006 report notes that Kazakhstan leads the central Asian economies by a wide margin thanks to excellent macroeconomic performance, but that the region as a whole lacks the strong institutions and basic infrastructure needed for competitiveness convergence with the transition economies of Central and Eastern Europe.

Table 1.2 **WEF Global Competitive Index – selected countries**

COUNTRY	2006 Rank	Score	2005 Rank
Switzerland	1	5.81	4
Finland	2	5.76	2
Sweden	3	5.74	7
Denmark	4	5.70	3
Singapore	5	5.63	5
United States	6	5.61	1
Japan	7	5.6	10
Germany	8	5.58	6
Netherlands	9	5.56	11
United Kingdom	10	5.54	9
Estonia	25	5.12	26
Malaysia	26	5.11	25
Czech Republic	29	4.74	29
Slovenia	33	4.64	30
Lithuania	40	4.53	34
Hungary	41	4.52	35
Italy	42	4.46	38
India	43	4.44	45
China	54	4.24	48
Kazakhstan	**56**	**4.19**	**51**
Turkey	59	4.14	71
Russian Federation	62	4.08	53
Mongolia	92	3.60	90
Tajikistan	96	3.50	92

Source: World Economic Forum (2006), *2006 Global Competitiveness Report*, WEF, Geneva.

This review of the country's tertiary education system, which follows a request by the government of Kazakhstan to the Education Committee of the OECD, will contribute to the process of identifying the further reforms needed to achieve the president's aim of joining the top 50 most competitive nations. This remains the focus of the report.

However, even the best tertiary education system cannot achieve national competitiveness if education at lower levels is inadequate. The review team,[1] therefore, also considered whether Kazakhstan's secondary schools, vocational training institutions and colleges are preparing young people effectively for, and giving them equitable access to, higher education and the world of work.

Kazakhstan's education system

Children in Kazakhstan have 11 years of compulsory education, usually starting at the age of six or seven. From three to six they may have attended kindergartens (pre-school). The primary phase of education, grades 1 to 5, takes pupils up to age 11, secondary education up to age 17, when almost all take the Unified National Test (UNT), which is both a school-leaving test and an entry test for tertiary education. A map of the system, also showing flows through it, is in Figure 1.1.

[1] Review Team members were:
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Rajendra Joshi, World Bank
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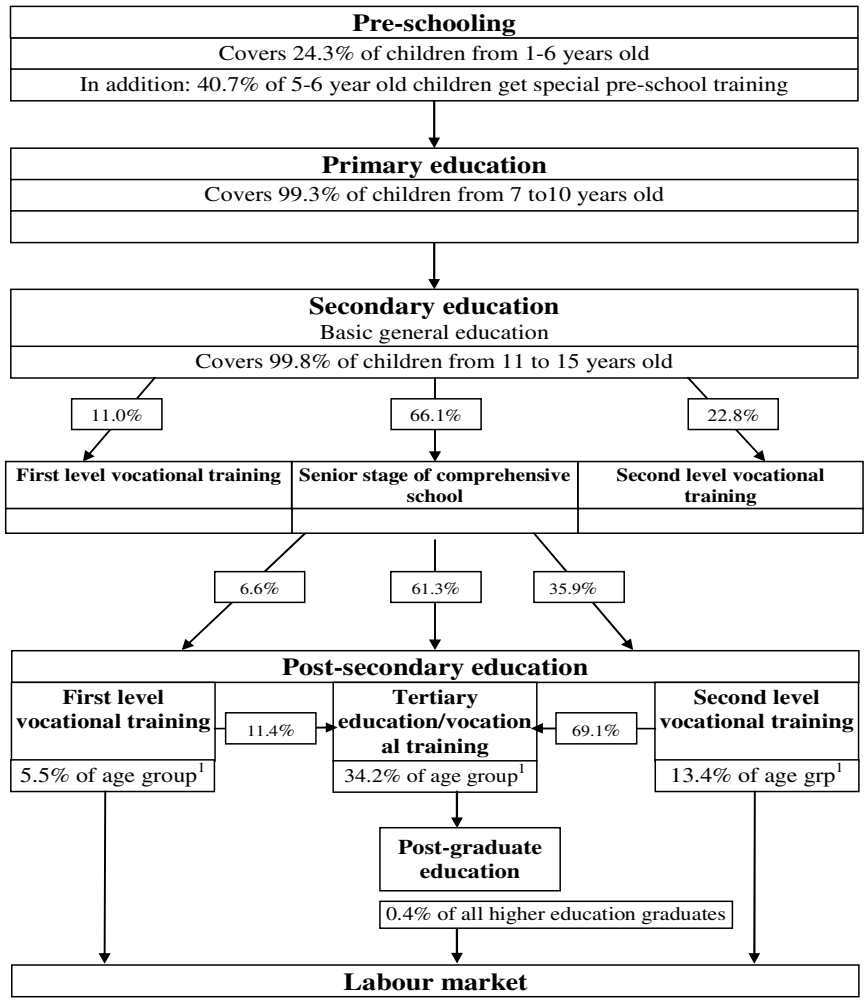
Figure 1.1 **Kazakhstan education system (all figures relate to 2005)**



Notes:

1. Percentage shown is of age group typical for that type of education.

2. The figures on arrows: based on counting numbers in particular parts of the system at a given point – may not sum to 100% where they include students from previous years. Statistics based on tracking cohorts of pupils through the system are not available.

Source: Reproduced from NCEQA (2006), *Kazakhstan's System of Education in Figures 2005*, National Centre for Educational Quality Assessment (NCEQA), Astana.

Educational institutions are not necessarily organised to match the phases described above. The smallest rural communities – by law entitled to a school so long as they have at least five children of compulsory school age – tend to have multi-level schools. After grade 9, children may remain in general (comprehensive) secondary schools or leave them for secondary vocational schools (*lyceums*), academic secondary schools (*gymnasiums*), first level vocational institutions offering basic labour market training, or colleges offering secondary and tertiary labour market training. At colleges, students may complete senior secondary education, if they entered after grade 9, and/or go on to tertiary courses; or they may enter tertiary courses having left schools after grade 11. Graduates from college tertiary courses can join Bachelor's courses in universities after the first or second year, but, as explained in Chapter 2, there are no systematic arrangements for this progression.

National education law envisages equal access and rights to quality education for all citizens of Kazakhstan.[2] *The National Report on the Status and Development of Education* (Damitov, *et al.* 2006 – also known as the National Education Report) comments on to what extent this objective is being achieved. It notes that lack of pre-schooling reduces opportunities to master the primary curriculum; that numbers in pre-schooling have increased lately, but that opportunities are not equally distributed geographically; that coverage is particularly low in the *oblasts* (regions) with high rural populations; and that Kazakhstan's 2004 figure of 23.6% of children aged 1 to 6 in pre-school education compared poorly with Japan's 96.8%, Russia's 87.2% and the United States' 60.8%. The same source gives 2004 figures for participation in compulsory schooling as 99.7% for 7-to-10-year-olds, 97.6% for 11-to-15-year-olds, and 89%, excluding rehabilitation institutions, for 16-to-17-year-olds. By 2005 the figures were 99.3% for 7 to 10s, 99.8% for 11 to 15s and 86.7% for 16 to 17s; and there was one computer for every 41 pupils in schools, down from one for every 62 pupils in 2000.

The National Education Report identifies the following problems in relation to compulsory schooling, which feed through into problems for higher education quality, access and achievement. According to the report, there is a clear correlation between levels of education and poverty, while access to quality education remains, to a great extent, the prerogative of the urban population. Because secondary education tends to be regarded as preparation for further or higher education, pupils graduating from most secondary schools do not get any professional qualification permitting

2 For example, in Article 3 of the draft new revised Law of the Republic of Kazakhstan "On Education".

access to the labour market. While the quality of teachers is improving in general secondary schooling, it is reducing in primary schooling and in first level and secondary vocational schools and colleges, where those qualified to teach are snapped up by industry at three or four times a teacher's salary. The status of teaching is low, as are teachers' salaries in relation to the GDP, compared to more competitive countries, and there are no adjustments for differences in performance, workload or marketable skills. School buildings are in a poor state, many not fit for their purpose of providing modern high quality education. Kazakhstan's schoolchildren have an extremely high workload compared to global averages, leading to health problems.

As the National Education Report recognises, it is difficult to evaluate the education standards reached by Kazakhstan school leavers, because there is no internationally comparable information on school performance or outputs, and the country has not yet taken part in any international student surveys. However, Kazakhstan intends to participate in the IEA's (International Association for the Evaluation of Educational Achievement) TIMSS (Trends in International Mathematics and Science Study) in 2007, and as a full member of the IEA it will then have access to full benchmarking information on their country's performance compared to others.

The only way the OECD review team has found of assessing Kazakhstan school leavers' education standards is through the National Academic Recognition Information Centres (NARICs), set up under the 1997 Lisbon Convention. This Convention, to which Kazakhstan is a party, deals with the international equivalence of qualifications concerning higher education entry and progression. The UK NARIC advised that they would regard a pass score in Kazakhstan's Unified National Test (UNT) as equivalent to passing several GCSEs with good grades in England. GCSEs are the subject exams English students take at age 16 after 11 years of compulsory education, two years before they take the A levels that would qualify them to enter a British university. By this token, Kazakhstan school leavers could not at present enter United Kingdom and other European universities without first gaining extra qualifications or the special cachet of selection for the Bolashak Programme (a presidential scholarship programme which enables competitively selected young people from Kazakhstan to undertake fully funded study abroad, more fully described in Chapter 7). This suggests that school leaver standards are not yet internationally competitive, which must limit Kazakhstan students' international mobility for higher education.

Recently, however, the government of Kazakhstan has committed itself to an important reform which could address many of the problems described above. A 12th year will be added to compulsory schooling, from as early as

2007, taking the typical school-leaving age to 18. The new 12th year is intended to cover what is currently taught in the first 18 months of a four year Bachelor's degree, allowing these degrees to be shortened to three years. The change will have wide ranging implications for secondary schools and higher education institutions, for students and families. Schools will need to be reorganised. The government plans to address small rural school underperformance by grouping 12th and 11th year students from such schools together into "high schools" serving a wider area. Colleges will take students after years 10 or 12, rather than nine or 11 as they do now. Standards and syllabuses at secondary schools, colleges and universities will need major revision. The present UNT, designed to test what has been learnt by year 11, will no longer be appropriate.

The higher education system described

Higher education institutions

Higher education institutions (HEIs) in Kazakhstan may be called universities, academies or institutes. Some have affiliated institutions such as a conservatoire, higher school or college; though tertiary education at self-standing colleges is not regarded within the country as part of higher education. Numbers of universities have grown dramatically since independence, and since the government legislated in 1993 to allow the setting up of private universities. There are currently 177 universities, 68 public and 109 private, plus 5 branches of Russian universities (Narenova, *et al.*, 2006).

To increase the international relevance and competitiveness of its higher education system, Kazakhstan has moved from teaching within 342 different narrow specialties (courses or educational programmes) to fewer, broader specialties, has decided to adopt a major structural reform taking place in the European Union, commonly known as "the Bologna Process", and is already reshaping most university courses into Bologna's three levels: Bachelor degrees (four years), postgraduate Master's degrees (two years) and PhDs (four to five years). As in other countries, medical first degrees take longer (seven years).

Student numbers

In 2004/5, the most recent year for which statistics are available, 744 200 students undertook higher education. 349 600 (47%) were full-time, 392 200 (52.7%) studying by distance learning and 2 300 (0.3%, almost all

in private universities) taking evening classes. 344 200 students were in private institutions (46.3%) and of those, 36.5% were full-time, 62.8% studying by distance learning. More detailed figures are listed in Chapter 3. The review team was told that those undertaking distance learning usually have first degrees, in another or the same subject, and may already be in work; but figures are not available to show this. Over 70 ethnic groups are represented among the students. The largest group is Kazakh (69.6%) followed by Russian (21.5%), Ukrainian (1.6%), Uzbek (1.4%), Tatar (1.2%), German (1.15%), Korean (0.9%) and Uigur (0.8%). Other ethnic groups total less than 0.5%.

Teaching staff

Teaching is conducted mainly in Russian (439 100 students in 2004/5, or 58.8%) and Kazakh (298 800 or 40%), but also in English (5 700 students or 0.8%) and Uzbek (3 527 students or 0.5%). The number of teaching staff in higher education institutions, public and private, in 2004/5 was 42 333, of whom 2 728 (6.4%) were doctors of science and 12 350 (29.1%) candidates of science (broadly equivalent to PhD). Interestingly, these percentages were slightly lower (5.8% and 28.6% compared to 7.1% and 29.9%) in the public institutions. The current number of full-time equivalent students per teacher is estimated to be 10.3 in the public institutions, 11.2 in the private institutions (Narenova, *et al.*, 2006).[3] Salaries are not high, and to compensate, many teachers teach at two or more different universities – so the student-staff ratio in individual institutions is lower, around the figure of 8:1 recommended by the Ministry of Education and Science (MOES).

Governance and management

Public higher education institutions in Kazakhstan have some degree of autonomy in governance and management. Though their land and buildings are owned by the state, they also depend on the state to fund equipment, and salaries for staff are set centrally, public HEIs can hire all their own staff except the rector (appointed by the president or the minister). HEIs have their own budgets and freedom to spend them within the parameters the ministry lays down. They can establish direct links with domestic and international partners, conclude contracts on mutual co-operation in the field of teacher training, and arrange exchanges of staff and students. However, autonomy does not extend to curricula, the organisation of teaching, admissions, or awarding their own degrees.

[3] To arrive at a figure for full-time-equivalent student numbers, each evening class student counts as 0.5, each distance learning student as 0.25.

Decisions on what each public HEI should teach are regulated by the MOES through the quality assurance system, as explained in Chapter 5. The review team was told that public universities require ministry permission to set up a new course. Subject syllabuses must follow the very detailed "state standards", at least in their core elements which account for 60% of study time in the first two years and 40% in the third and fourth years of a Bachelor's degree. MOES regulations govern the number of hours for which students must study and teachers must teach: both are very high by international standards. The MOES decides which students will get grants, on the basis of the subjects they have chosen, the universities for which they have declared a preference, their scores in the Unified National Test and whether they are in a special group. The admissions process is more fully described in Chapter 3.

Private higher education institutions, where founders can appoint their own rectors, have more operational autonomy and greater management flexibility. As owners of the land and buildings, they can do with them what they wish. Equipment, books and study materials can be obtained more quickly than by public HEIs, which must often write to the ministry and wait. Private HEIs can and often do pay teaching staff better than the public HEIs. The downside of this greater freedom is, of course, that private HEIs have to fund (by borrowing if necessary) all their own capital and running costs, including major items that the public HEIs receive free. And while private HEIs are free to choose what subjects they will teach, they have no more autonomy over curricula and admissions than public HEIs. State standards and quality assurance apply to both equally.

Qualifications

The MOES issues degree certificates (generally called diplomas in Kazakhstan) for all universities, both public and private. HEIs, like public ones, need a license from the MOES to operate. A prestigious private HEI such as Kazakh British Technical University may set a higher entry standard, in terms of UNT score, than the general pass score for the year in question. No university may admit school leavers who have failed to reach that general pass score, which is set by the ministry. When the UNT was introduced in 2003 the pass score was set at 40 out of 120. In 2006 the overall pass score rose to 50. A further increase, to 60, has been discussed. The level at which the pass score is set has implications both for access, and for the financial viability of some private HEIs.

Fees

The ministry also lays down minimum amounts universities should spend per student on providing courses, which universities regard as setting the fees they should charge students. Private universities may charge more if they believe their market will bear it. A small percentage of students win scholarships or find sponsorship. Those students who score highest in the UNT and intend to take courses defined by the government as of national or regional priority, are given public grants, which in effect means that the government pays the fee for them. The courses attracting the most grants are predominantly scientific and technological and taught in public universities, where in 2004/5 36% of full-time students were publicly funded, compared to 16% in all universities. The economics and law courses taught in many private universities carry few grants, so the private institutions rely heavily on attracting students willing and able to pay their own fees. The 84% of students who paid their own fees in 2004/5 represented a significant increase since 2000/1 when the figure was 71.5% (Narenova, *et al.*, 2006, Appendix 7.4). The number of students funded by grants or loans rose by some 17 000 in those four years, but there was a much bigger rise in total numbers, in numbers at private institutions, and particularly in distance learning, which rarely, if ever, attracts public funding. The willingness of more and more individuals to pay for university education says much for the high aspirations of Kazakhstan's young people and their enthusiasm for higher learning, but debate is growing within the country on whether the government is really offering equal opportunities and access for all.

Funding

Fees from students, or grants/loans/sponsorship payments to cover fee costs, are the main source of funding for higher education institutions. This mechanism is aimed mainly at establishing a market among HEIs, and ensuring that the main beneficiary pays – the state in the case of priority specialists, companies if they are sponsoring potential or actual employees, the individual otherwise. There is however special support for the institutions regarded as leading universities – which include the "national" public universities and the private Kazakh British Technical University, and will of course include a new international university being built in Astana. This support takes various forms – higher student grants, more generous funding of public universities' facilities and equipment, privileged access to research grants and contracts directly or via linked research institutes, preferred supplier status for other contracts such as for designing new or updated state standards and syllabuses. When the rector of one very highly regarded national university was asked how much his budget was, he could

not quote a figure, but described it as "enough". Other public universities, particularly those outside the leading group, appear to have more difficulty making ends meet and sustaining quality; keeping equipment and facilities up to date with modern requirements appears to be a particular problem. Funding responsibility for Kazakh State Agro Technical University in Astana was transferred some years ago from the MOES to the Ministry of Agriculture; the university told the team that this had improved their financing and made it much easier to get special funding for equipment.

Private universities (other than Kazakh British Technical) benefit from much less government funding through student grants and are far less likely to win government contracts or research funding. The lack of support for buildings, facilities and equipment also puts them at a serious fiscal disadvantage. They must earn virtually all their money from paid or sponsored students. It was suggested to the team that these financial circumstances lead some to reduce the quality of their offerings, and a few to offer so little that they are virtually selling diploma certificates (though these are of course actually issued by the MOES, which imposes strict quality control – see below). However, though the team was told that the visits programme would include some "bad universities", it was not clear which these were. At the private universities visited, rectors seemed no less effective or committed to high quality education than those of public universities, and their equipment and facilities were on average no worse, sometimes better.

Quality assurance

The quality assurance system is many layered. Players in the system include the MOES; the ministry's Committee for Supervision and Attestation; the National Centre for Educational Quality Assessment; the National Accreditation Centre; the Centre for Certification, Quality Management and Consulting; and the National Centre of State Standards for Education and Tests. All these agencies are involved, directly or indirectly, in aspects such as licensing higher education institutions to operate, checking their compliance with licensing requirements, attestation, accreditation and interim control. At present, all come under the jurisdiction of MOES, though the National Accreditation Centre (the body most resembling the national higher education quality assurance agencies in Western countries) hopes to become independent. The role of each is discussed in Chapter 5.

Admission

The process of admission to universities from schools**,** via the Unified National Test (UNT) or its equivalent the Comprehensive Test, is reasonably clear (see Chapter 3). The process of admission from colleges is not. Colleges equip school leavers with lower tertiary level vocational qualifications. These qualifications are highly valued by employers, and make their owners highly marketable. Despite this, many college leavers aspire to pursue their vocational studies to Bachelor's degree level at a university. In most Western countries, there are clear progression routes up the ladder of tertiary vocational qualifications. In Kazakhstan, though some universities have their own affiliated colleges, the traditional local authority run colleges are not generally regarded as part of higher education. College syllabuses in a subject often fail to dovetail with university syllabuses in the same subject, because they are drawn up independently. There is no common practice or understanding on whether a college qualification at highly skilled technician level will enable the holder to join a university Bachelor's course after the first year, or the second (at one college visited, the students and the teachers gave different answers on this). These uncertainties contribute to colleges' low status in the Kazakhstan education system; and problems in the feeder system from colleges contribute to the shortage of students admitted to and graduating from higher education in vocational specialisms, many of them defined as national or regional priorities.

Higher education and the labour market

There is limited articulation between higher education and the labour market and limited interaction between most Kazakhstan universities and employers, compared to the world's more competitive countries. Companies provide internships and there are *ad hoc* contacts between individual universities and local employers, for the purposes of finding graduates employment. However, national statistics suggesting that nearly all graduates find employment – based on returns from universities keen to demonstrate high rates of subsequent employment in order to safeguard their operating licenses – are generally regarded as too good to be true. There seems to be no regular or formal involvement of employers in estimating the numbers of graduates needed in different disciplines; preparing occupational profiles or state educational standards; defining the knowledge, skills and competences required on graduation; or assessing final standards. Nor are there effective links between universities and employers for the purposes of research, fundamental or applied, or commercialising scientific discoveries.

The government has some answers to the problems just described. The cumulative credit-based system now being introduced into university programmes should, when fully rolled out, allow clearer articulation between lower tertiary courses at colleges and Bachelor's courses at universities. There are also plans to set up perhaps ten higher technical schools or "super colleges" around the country, from which students can graduate at skilled worker, technician/middle manager or Bachelor's degree level.

Internationalisation

The internationalisation of higher education is a prerequisite for international competitiveness and a Kazakhstan national priority. The country's best known international initiative is the Bolashak Programme, which supports study at top universities in other countries with all expenses paid, on condition that the students return to work in Kazakhstan for the benefit of the national economy. This programme has assisted 2 500 students since being set up in 1994. Kazakh students seem keen to study abroad and many clearly have the language competence to do so. However, though families affluent enough to bear the full costs of foreign education may well send their children abroad, outside Bolashak there are few chances of international education for the student of moderate means. And very few young people come from outside the former Soviet Union to study in Kazakhstan. The country's universities are not well-known abroad and none has yet appeared in rankings of the world's best universities, overall or for specific subjects. There are few international elements in university curricula (though the Kazakh British Technical University has fought for the right to include them) and the country's academics publish relatively little outside the country, except in Russian. Though several universities visited recognised the importance of recruiting eminent professors from abroad, they lack the research and innovation opportunities to attract them. There is a strong relationship between the competitiveness of higher education teaching and learning and a country's strength in research and innovation. It is worth noting that the top 20 countries for higher education and training in the WEF Global Competitiveness Index 2006 were all in the top 25 for innovation.

Recent government actions and plans to improve internationalisation include expanding the Bolashak Programme to 3 000 places per year; acceding to the WTO Agreement on Trade and Services; signing up to the Bologna Process and the Lisbon Convention on qualifications recognition, to encourage student exchange; moving towards international quality assurance practice; and setting up a new international university in Astana (see Chapter 7).

Research, development and innovation

Research, development and innovation activities remain the least reformed area of the higher education system in Kazakhstan. The existing Science and Technology (S&T) base is a wasting resource that has already eroded significantly and is in danger of continuing decline. With nearly 41 000 research scientists at its peak, Kazakhstan was an important centre of R&D in the former Soviet Union (Narenova, *et al.*, 2006). But as space research and military orders dried up, the number of research personnel declined dramatically so that by 2005, according to government statistics, only 18 912 researchers continued to work in the R&D sector (Narenova, *et al.*, 2006). Older scientists reaching retirement age are not being replaced by a younger generation. Kazakh scientific institutions – academic research institutes, classical universities, technological or engineering universities – tend not to co-operate effectively with each other and with domestic and foreign markets. Their decisions on research priorities take too little account of market demand, technology upgrading, the needs of local enterprises, or the government's scientific priority areas.

Most researchers in HEIs combine research with teaching, but the typical 800 to 900 class contact hours a year severely restrict research time. Recent studies by international experts[4] have found the quality of R&D equipment and instrumentation in research institutes and university laboratories to be poor: between 1983 and 2004, almost no new scientific equipment was acquired. Not surprisingly, the output of the scientific community is below the average for middle income economies. In 2003, Kazakh scientists published fewer than 100 internationally peer-reviewed scientific and technical journal articles per 10 000 researchers in R&D, compared with 330 in Russia (Thomson, n.d.). The number of patents per researcher is very low.

Strong points and areas for improvement

The Republic of Kazakhstan's higher education system has come a very long way from its Soviet roots since independence – particularly compared to other Central Asian countries starting from the same point. Impressive progress has already been made towards a market driven system. Kazakhstan has to go further and faster, however, if the president's ambition to join the 50 most competitive countries is to be met, and the system is to

[4] Analysis by Center for Engineering and Transfer of Technologies and field visits conducted by Indian and German experts (unpublished).

serve the needs of Kazakhstan's future economic development and of all its people.

Strong points include:

- the country's steady economic growth, which allows education and higher education spending to increase without pain elsewhere;
- the student population's high literacy levels, good language skills and multicultural harmony;
- the size and diversity of the university sector, with equal rights for private institutions and several different modes of learning available;
- the free choice of university available to students who pass the Unified National Test (UNT); and the related education voucher system that allows the best students to choose their institution;
- the principle of a single national entry test, rather than each university setting its own;
- recent adoption of the Bologna three level model for courses, which will facilitate international recognition and mobility;
- plans to introduce a 12th year of schooling, which has the potential to raise school-leaving standards to European levels;
- strong demand from young people for higher education, even at some personal financial sacrifice;
- the Bolashak Programme, which gives encouragement and prestige to international study;
- the considerable autonomy enjoyed by higher education institutions, especially the private ones, in operations, management and financial matters;
- the government's general willingness, and in some cases specific plans, to move towards international best practice in quality assurance, governance, teaching and research.

The review team has identified the following areas offering scope for improvement, as proposed in later chapters of this report:

- public spending on education, higher education and research are all low by the standards of more competitive countries (see Chapter 4);

- funding arrangements make it more difficult for private than public universities to provide high quality education (see Chapter 4);
- there are significant inequities in access to university and to student financial support (see Chapters 2, 3 and 4);
- the Unified National Test is imperfect, both as a school-leaving test and as a university entrance test (see Chapters 2 and 3);
- central controls over courses, curricula, organisation of teaching and degree standards are limiting universities' proper academic freedom and ability to respond to the needs of the economy, students and employers (see Chapters 2, 3, 5 and 6);
- the higher education quality assurance system is over complex, with too much emphasis on compliance checks and too little on university self-evaluation and improvement (see Chapters 5 and 6);
- teaching and learning quality is damaged by excessive teaching hours, uncompetitive teaching salaries, lack of scope to recognise and reward good teaching or research in the pay structure, inadequate opportunities for teachers to update subject knowledge, poor equipment and information resources, and lack of financial support for in-service professional development (see Chapters 5 and 8);
- the higher education sector does not relate effectively to the labour market (see Chapters 2, 5 and 8);
- vocational higher education is weakened by problems in the tertiary colleges, including too few students, poor funding, low status and an unclear relationship to university education (see Chapter 2);
- research, development and innovation need substantial strengthening (see Chapter 8);
- more emphasis is needed on learning from and exchanges with the world's most competitive countries (see Chapter 7);
- the statistics and information available on higher education participation, output and performance are not good enough for sound policy making, effective evaluation or system improvement.

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Chapter 2: System Structure and Labour Market Relevance

Chapter 2 gives a detailed analysis of the structure of the higher education system in Kazakhstan. It describes the size of the system and discusses the types of higher education institutions. There is an analysis of education standards both on admission to higher education and again on graduation. The review team offer their comments on the draft "National Programme to reform the Vocational Training System".

The higher education system is then discussed in the context of labour market relevance and the relationships between higher education institutions and the labour market. The chapter concludes with the findings and recommendations of the review team.

Introduction

Reforms since independence have brought about major changes in the higher education system of the Republic of Kazakhstan. Numbers of universities have expanded, the sector has diversified, many more young people are now studying and much larger numbers are choosing to do so part-time. Some autonomy and decision making has been decentralised, from the Ministry of Education and Science (MOES) to university management, students and staff. Whereas formerly the government planned both the economy and the supply of graduates to fulfil their plans, now the higher education system must respond to the often unpredictable demands of national and international labour markets. Whereas in the early years of transition the government's strategy focussed on stabilising the economy and recovering lost productivity, now the country is prosperous, confident, ambitious and keen to take whatever steps are necessary to join the world's 50 most competitive countries.

This chapter considers a number of structural and labour market issues, including:

- whether the tertiary education sector is training the right numbers of students;
- whether it is training them in the right subjects, and at the right level;
- whether the system has the right kind and number of institutions;
- whether admission standards and graduation standards are high enough for national needs and international competitiveness;
- whether the higher education system is preparing students in the ways most relevant to labour market needs, national and international.

Size of the system: students

Total numbers studying in higher education institutions were 744 200 in 2004-05. Kazakhstan education statistics for 2005 measure this as 34.2% of the relevant age group. Some concern was expressed during the team's visit that Kazakhstan has too many young people in higher education. There are fears that numbers this high inevitably involve "dumbing down"; that the numbers being admitted are greater than those capable of benefiting from higher education; that serving this many students will cause quality to fall, at least in some institutions; that the economy does not need and cannot sustain this many graduates; and that the excess should be undertaking vocational training in colleges instead. The Ministry of Education regards 30% of the age group going into higher education as about the right level.

The review team has calculated participation figures on a basis comparable to that used in OECD publications, to allow international comparisons. These calculations, shown in Chapter 3, Table 3.2, suggest gross participation rates of 44.3% of the 19-to-24-year-old population in all forms of higher education and 20.8% in full-time higher education. This gross participation rate is below the average for degree level courses in OECD member countries. Bearing in mind Kazakhstan's aim to become competitive with these countries, the current participation rate does not seem excessive. A further consideration is that higher education in Kazakhstan begins at an age (17) and stage (after grade 11) when young people in many Western countries are still in secondary school.

A key indicator of whether a higher education system is the right size is whether it is producing the right numbers of trained workers to meet the

needs of the country's labour market. This is usually assessed by looking at whether there are unemployed skilled workers or skill shortages in the economy as a whole or in key employment sectors. The review team was not given reliable labour market statistics on which to form a judgement on the position in Kazakhstan. Another indicator is the percentage of graduates who find jobs on graduation. Preferably, these would be jobs in the disciplines the graduates have trained in, especially in specific vocational areas, like medicine, that require long and expensive training; but in a free labour market a perfect match between supply and demand is unlikely, and higher education can be said to serve its labour market purpose wherever a person's qualification assists them in getting a job. Graduates with relevant qualifications can also aspire to compete in the international labour market.

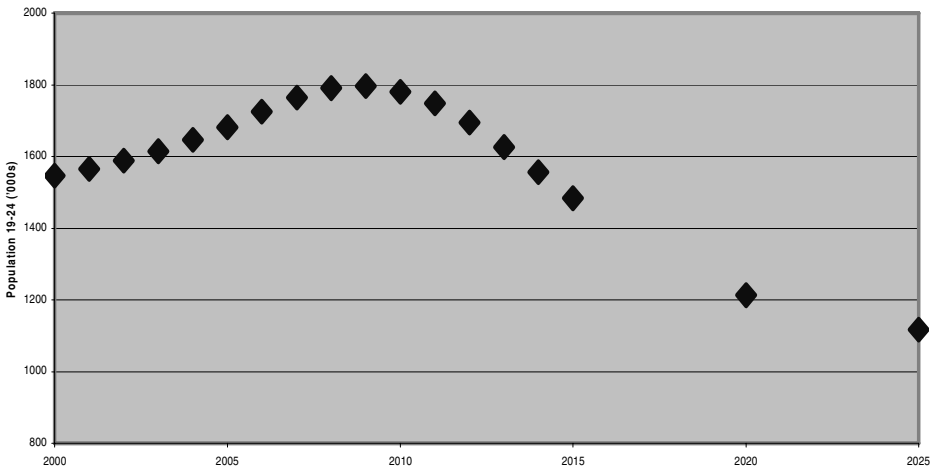
National statistics are inconsistent on the employment levels of graduates. According to one set of figures in the The National Education Report (Damitov, *et al.*, 2006), 99% of university graduates find employment. This is based on universities' own returns, which rely on whether an employer or agency has declared that they will employ a student on graduation. Returns and their source documents are not checked independently, universities have every incentive to inflate them because a poor employment rate could lose them their operating license, and the 99% figure is widely regarded as suspect. No university to whom the review team put the question claimed to have achieved it. Other statistics, however, corroborate the positive effect of higher education on employment chances. For example, there are fewer graduates among the unemployed (10.5%) than among the general population (12.6%) (Damitov, *et al.*, 2006). Another question worth asking in many countries would be how graduate salaries compare to non-graduate salaries. In Kazakhstan, this comparison is less meaningful because the government specifies the salary levels for all public sector graduate jobs, keeping them relatively low.

Consideration of whether the system is the right size should take account not only of numbers who start courses, or are in higher education at a given time, but also of how many complete them. Kazakhstan statistics do not follow cohorts through education, so there is no information on this. National statistics (NCEQA, 2006) reported drop-out from higher education during 2004 as 15.6%, up from 13.6% in 2000. This suggests significant wastage rates from 4 year degree courses; but it would be unwise to attribute this increase to "dumbing down" without further breakdowns of where the main problems are occurring (public or private institutions, full-time or part-time study), which might give clues to the reasons.

Overall, the review team has no reason to believe that the size of the higher education system, in terms of numbers of students, is excessive at present. However, two changes are coming which will almost certainly

reduce the national higher education student population and put pressure on the viability of at least some HEIs. The first, already mentioned in Chapter 1, is the introduction of the 12th school year. Enabling young people to leave school equipped with a much higher level of knowledge and skills may mean they feel less need for a degree. Even if the same percentage of the cohort goes into higher education, shortening Bachelor's degrees from four years to three will cause the numbers in higher education to fall sharply. The second is demographic changes that will mean many fewer young people in the relevant age group. Figure 2.1 shows that, following the collapse of the Soviet Union, Kazakhstan experienced a significant decline in population. Although since 2002 the population has begun to grow again, the lower fertility of the 1990s will be reflected in diminished numbers of university aged students after about 2010. The number of 19-to-24-year-olds will drop steadily from a peak of 180 000 in 2010 to below 120 000 in 2025. While it is not possible to predict accurately the effect of this drop on the higher education system, it seems virtually inevitable that gross enrolment will drop from 2010 onwards.

Figure 2.1 **University age population 2000-2025**



Source: Single age population data received from the World Bank.

System output: upper tertiary education

The review considered not only the total size of the higher education system, but also whether it is producing the right numbers of students to meet labour market needs for appropriately skilled graduates in particular disciplines.

Judging from the review team's discussions with the Kazakhstan Confederation of Employers and with a leading recruitment agency, it seems that employers are generally happy with graduates' levels of knowledge in their disciplines. However, they complain that the sector is producing too few graduates in the technical and scientific disciplines; and they would like more working competence in English and Information and Communications Technology (ICT) skills from graduates with degrees in other subjects. Although it is often suggested in Kazakhstan that the higher education sector is turning out too many graduates in economics and law, employers do not make this complaint; and the very limited statistics available do not suggest that graduates from those disciplines are disproportionately failing to find jobs. Nor does it seem that employers care greatly about which university a student attended, though some have a regular relationship with a particular university for the purposes of recruitment and internships.

It was made clear to the review team that major employers do not recruit on the basis of subject knowledge alone. Employers value, and factor into recruitment, a number of other skills not taught as standard in universities, such as team working, learning to learn and entrepreneurial skills. International companies look for subject knowledge in line with international standards, plus adaptability, willingness to learn, critical thinking and a wider range of organisational skills. Employers' recruitment choices are also heavily influenced by the individual student's personality and willingness to work hard and work their way up a company. A common employer complaint is that too many higher education graduates think that their degree certificate entitles them to enter organisations at a high level and high salary. Often they are not prepared to get their hands dirty and work their way up within a company, so employers have no flexibility to start them at lower levels where qualified labour is scarcer.

System output: lower tertiary (vocational) education and training

While employers do not, in general, say that there are too many graduates absolutely, they do say that there are too many compared to the numbers of qualified skilled workers and technicians. The worst shortage is of workers with lower tertiary level vocational qualifications, also called

"Type B" higher education, "Type A" being degree level. In many other countries, including some of the most competitive, this training would be formally part of the higher education system; vocational qualifications would be as well regarded as academic qualifications at equivalent level; and there would be clear progression routes, or "ladders of qualifications", allowing holders of such qualifications to proceed to degree level without repeating learning or losing time.

In Kazakhstan, Type B or lower tertiary education is referred to as "Secondary Vocational Education". It may be started in secondary vocational schools (*lyceums*), but is generally completed, and qualifications awarded, at colleges. Some colleges are affiliated to and part of universities. These may be regarded as part of higher education, but most colleges, run and financed by local authorities, are not.

Because the remit for this report does not extend to an analysis of Vocational Education and Training (VET), the team did not visit any first level VET institutions during its visit to Kazakhstan, but did include visits to two colleges in order to understand the functioning and linkages of this part of the tertiary education system with the universities. It was clear to the team that colleges and their trainees are disadvantaged in many ways, compared to universities and their students.

The first disadvantage is numbers. Many colleges were closed during *perestroika*, and though they have built their numbers up since, by 2005, these had reached 397 600, compared to 775 800 in HEIs. This is a ratio of 1:2, whereas most countries would aim for at least three "Type B" trained workers for two "Type A", and most countries have very much more training by employers to complement their college provision. According to Kazakhstan national statistics for 2005, just 13.4% of the relevant age group are in "Type B" education in colleges, while 34.2% of the relevant age group are in "Type A" education in universities.

The second disadvantage is funding. The review team was told by a college visited that its local authority funded grants for students (where eligible) and staff salaries, but made no regular provision for equipment, books and teaching materials: special cases had to be made for these, or employer sponsorship had to be found. The third disadvantage is staff. The student: staff ratio in colleges is higher than in either first level vocational education or higher education, having increased from 9.2 to 14.4 since five years ago, when it was the lowest. This is due in part to lecturers leaving to work for companies desperate for skilled workers and technicians, who pay much higher salaries. The fourth disadvantage is status. Higher education institutions have much higher prestige, nationally and locally, as do their rectors/directors and staff. Most college students had hoped to go to

university, but failed the Unified National Test; inevitably they, their families and their communities regard a college qualification as second best. One result is that, instead of taking their badly needed skills into the labour market, 69% of college graduates enter university (see Figure 1.1) – where they often find that, because their college course syllabus does not dovetail with the university course, they have to repeat things already learnt, alongside younger students who know less.

The seriousness of these disadvantages, and their adverse impact on the labour market, is now recognised by the government and by parliament. President Nazarbayev told a session of the presidential foreign investor council on 8 December 2006 that the country faces an acute shortage of skilled technical specialists: he called on domestic and foreign investors to join forces to create a modern system of technical and professional education, aimed at training personnel able to compete at the international level (Interfax, 2006). Among other things, the government plans to set up higher technical schools. These will take high quality students through up to three stages of vocational qualification, the highest being degree level. However, present plans are for just ten of these schools, far too few to solve the national problem. This review sees a need for a parallel strategy to regenerate, expand and raise the status of the colleges, to include the following elements: (1) *information and guidance*, to show young people the career benefits and opportunities; (2) *raising the prestige of vocational education and training (VET)* – by new and refurbished buildings, up to the minute equipment and high quality, better paid teachers – so that students choose it before trying and being rejected for university, particularly in technical specialist areas suffering the worst shortages at present; (3) *financial incentives*, so that VET students are at least as well supported through grants, etc. as higher education students, preferably better; (4) *ensuring that college and higher education curricula in the same subject dovetail*; (5) opening up *more and clearer progression routes to higher education levels*, so that students feel they are strengthening rather than weakening their chances of progressing further by choosing the college (or new higher technical school) route; and (6) *redesignating tertiary VET as part of the higher education system*. Fleshing out the above proposals for colleges is beyond the scope of this report, but deserves a separate project with international expert assistance.

After leaving Kazakhstan, the team was provided with the recently developed MOES strategy to reform the Vocational Training system [*The Concept of the National Programme to Develop Vocational Training in the Republic of Kazakhstan Between 2008 and 2010, draft file; November 2006*] and asked to include comments on it in this report. The vision for VET set out in that document is very much in line with the recommendations in this

report, but the team has some suggestions on how best to realise the vision. Comments and suggestions appear in Box 2.1.

Box 2.1 Review team comments on draft National Programme to reform the vocational training system

This proposed National Programme is a positive development. It highlights the key training issues confronting Kazakhstan in its quest to develop a competitive economy, *i.e.* the inadequate provision of VET throughout the country's 24 districts; the obsolete and under resourced system; and the lack of training capacity responsive to labour market signals.

The goal of the proposed National Programme, to be achieved by 2011, is to improve VET and make it more accessible while, at the same time, implementing the government's economic and social programmes. Training programmes will benefit from the involvement of employers, who will be expected to finance 50% of their provision. New inter-regional centres, each accommodating 700 people, will be developed to respond to regional priorities. Three levels of vocational training are to be put in place: from the basic or initial level, which will prepare students for specific occupations, through to a second level, which will aim at achieving more complex and higher level skills, to a third level, which will train students for junior technician jobs after four years of training. The MOES has worked out the various governance levels for managing the system, from its own role, which is to develop policies and standards, to the role of local government and of the private sector. Quality will be assured by the National Qualification Centre in co-operation with employers. Statistics will be compiled in order to predict skills shortages.

In order to finance the development of this vocational training programme, it is proposed to set up a National Human Development Fund using 1% contributions from employers. These contributions will be levied as long as the value of goods manufactured or services provided from international sources exceed domestic production.

While the review team is in thorough agreement that the VET system in Kazakhstan is neglected and under resourced, without a more thorough analysis of the sub sector, it is not possible to give detailed comments on the proposed National Concept here. However, the following comments and recommendations can be made, based on current international best practice and on the experience of and analysis undertaken in the former centrally planned economies of the new EU (European Union) member states. These comments are also designed to complement the analysis and recommendations on tertiary education contained in this report.

The proposals pay insufficient attention to the formal role of employers and the involvement of other agencies, especially the Ministry of Economy and Labour, in the proposed National Programme for the Development of VET.

It is recommended that social partnership and tripartite structures be developed on a consultative basis at local and regional levels in order to ensure that the VET system is responsive to the needs of the labour market and that employers are assured that flexible training programmes are in place to produce employees whose skills will be broad and will not become obsolete with changes in technology.

The team agrees that it would not make sense to use public money to try to restore the equipment and teaching staff of all existing vocational schools to the standard needed for them to achieve their objective in a volatile high technology world. Even if this involved the creation

of Practical Training Centres serving a number of schools in a locality, it would be prohibitively expensive. Therefore, the proposal to create and finance new technical and inter-regional training centres for technical and service skills training with the support of private financing seems a good idea.

The team supports and recommends a serious restructuring of existing VET and a clustering aimed at a flexible labour market oriented system that would provide for broader transferable skills and competence based qualifications.

The role of the private sector in providing and financing skills training for new recruits and existing employees, as well as the development of private training institutions (especially for sectors where there is market failure), needs to be developed in consultation with employers' associations. A general 1% payroll tax may not be the best way forward.

The provision of just-in-time vocational training by private institutions can also be expected to help to fill the skills gap mentioned in the National Programme.

The team recommends, where possible, the location of practical training in workplaces rather than in schools or practical training centres, in order not only to reduce costs to government, but also to ensure that training is related to today's rather than yesterday's technology.

This recommendation also implies a need to develop modern apprenticeship systems with the support of companies.

Whatever the funding mechanism and governance model, non-viable vocational schools should be closed or merged.

The proposed Concept for VET reform implies a focus on forecasting as an instrument of labour market prognosis.

Forecasting manpower needs is notoriously inefficient and leads to all kinds of rigidities in the provision of training. What Kazakhstan needs is a demand driven VET system that does not rely on the provision of statistics, but has the flexibility and sensitivity to respond to local labour market signals. A well functioning quality assurance system will greatly facilitate that process.

The stated goal of making VET accessible is very important. However, as discussed in Chapter 3, there is evidence that inequities begin in initial and lower secondary education and are thereafter perpetuated in post school education and training where those who have not completed upper secondary education and those with low skilled jobs continue to be accorded the fewest opportunities for lifelong learning.

The Republic of Kazakhstan may wish to consider moving increasingly towards post-secondary VET. If education is regarded as a public good, the logical place for specialist and relevant vocational training is after the completion of a high quality secondary education. The aim within upper secondary education would then be to ensure that it imparts key competences and new skills to as many of its graduates as possible – to the benefit of learning and labour market outcomes and international competitiveness.

Size of the system: numbers of higher education institutions (HEIs)

Table 2.1 shows the number of HEIs in Kazakhstan, and how these have grown in recent years.

Table 2.1 **Network of higher educational institutions in Kazakhstan**

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Total	125	153	165	166	170	182	173	175	176	177
Of which:										
Public	54	54	51	52	47	60	62	63	68	68
Non-public	71	99	111	114	123	122	111	112	108	109

Source: Kalanova, Sh. (Executive Co-ordinator) (2006), "National System and Higher Education Standards of Kazakhstan", in M. Narenova, *et al.* (2006), "Doklad po natsionalnoy politike v obllasti vysshego obrazovaniya Respubliki Kazakhstan" (National Policy in the field of Higher Education in the Republic of Kazakhstan), unpublished background report and presentation prepared for the review team.

This proliferation of HEIs has raised the same question as the increases in student numbers: are there now too many? Some in Kazakhstan believe there are, doubting the viability of some of the smaller private universities and the quality of the education they are offering. The review team was asked to advise on the question.

Chapter 4, on financing, analyses the average size of public and private institutions. The conclusion is that, although some newer universities inevitably started small, they have grown, and the average private university now has a large enough student population for viability. While the quality of Kazakhstan's HEIs may indeed be variable, the review team did not find any clear association between quality of teaching and learning on the one hand, and size or public/private status on the other. In the absence of any comparable information on different institutions' output and achievements it is difficult to judge, but no evidence was seen on visits that smaller private universities generally perform worse than larger public ones. Indeed, in some smaller institutions, teachers and students agreed that their size made for friendlier relations between students and staff, a more supportive learning environment and more attention to students' progress and problems.

Overall, the review team sees no reason to believe that the present number of institutions, or the small size of some, presents a problem in itself. But when 12-year schooling reforms feed through into shorter Bachelor's degrees, reducing the need for university places by up to a

quarter, this is bound to put pressure on some of today's universities and lead to some rationalisation in the sector. The demographic changes in Figure 2.1 will impact later and more gradually, but could reduce demand by up to a further third. Higher education institutions may wish to react to this by specialising in niche areas, either their areas of highest quality, or those most relevant to labour market needs. If, however, there is no longer a place for all, it will be important to ensure that the stronger stay and the weaker go. The best way of ensuring this is by a combination of quality assurance mechanisms (see Chapter 5) and market forces. To allow market forces to operate, there needs to be greater transparency, so that the public and potential students can be much better informed about the performance and relative merits of different institutions. Improving information and guidance for students, and allowing universities to award their own degrees, as recommended below, should help to achieve this transparency.

Types of higher education institutions

The review team was also asked to take a view on whether Kazakhstan needs the present three different types of HEIs: universities, academies and institutes. If the country were setting up the system from scratch, the need for three types would not be apparent; but if these distinctions are still thought relevant, there seems no compelling reason to disturb current arrangements.

Another question put to the review team was whether some institutions should be designated "elite" universities, and given special privileges or operating conditions, as already being considered by the government. The answer rather depends on the purpose to be served by the designation. There could be three possible purposes. First, the government of Kazakhstan may regard it as important to the country's international competitiveness to have one or more world class universities, ranking among the world's top 100 or 200. This is an entirely legitimate aim, but it is as well to consider what has made the world's best universities great. Common factors include: passion to excel and advance in both research and teaching, maximum academic freedom, top class professors respected by their peers around the world, and generous funding. Age and a great tradition help too. Many of these factors cannot be created by governments, only by institutions themselves. Others can be, but only by changing established policies, such as Kazakhstan's commitment to maintain a level playing field between different HEIs, and practice of regulating or controlling decisions on key academic matters, professors' pay and conditions, etc. If the government wishes to go down this road, a useful example to study is that of Germany, which has very recently made the same decision, involving similar breaks with tradition,

and has introduced a fully competitive process involving international peer review to choose the universities to be designated elite.

Secondly, the government might wish to use the incentive of the elite designation to encourage a wider group of the country's universities – as wide a group as possible – to achieve high quality teaching, learning and research and good governance. The review team would warmly endorse such an approach. As Chapter 5 and Chapter 6 point out, the incentive mechanism has already been set up, in the new accreditation system; HEIs that gain accreditation will have proved themselves worthy of extra freedoms and autonomy.

Thirdly, the government might wish to grant elite status to those HEIs thought most capable of leading the system in cutting edge research (fundamental, applied or entrepreneurial) and in improving teaching and learning. Elite status would carry with it extra funding, but also the responsibility of disseminating research findings and good practice to others. This approach is worthwhile too. The review team would, however, strongly advise that if it is pursued, the elite designation should be awarded on the basis of a competitive process, involving international peer review; and should reward pursuit of international standards and best practice, and joint working with leading universities overseas.

Education standards on admission to higher education

The standard for admission to university is set by the pass mark for the Unified National Test (UNT), which also serves as a school-leaving test. Thus university admission standards are the same as school-leaving standards. The review team strongly endorses the principle of having a single national merit-based entry system for all higher education institutions, and believes this will continue to be the right approach for Kazakhstan in the future. However, the team was told of a number of issues around the UNT's operation in practice. This chapter considers how well the UNT functions as a school-leaving exam, and whether UNT results tell tertiary education institutions and employers, national and international, what they need to know about school leavers' education standards. Chapter 3 considers how well the UNT ensures access and equity in admissions to higher education. Chapter 4 discusses how the UNT affects student and institutional financing.

As noted earlier, Kazakhstan's president has recently declared it his aim that the country's education system should produce people capable of competing at international level. To compete effectively for places at overseas universities, Kazakh school leavers need to be able to demonstrate standards of knowledge and skills equivalent to local university applicants.

National Academic Recognition Centres (NARICs), the agencies in each country tasked by the Lisbon Convention with advising on standards equivalence for the purposes of entry to higher education and employment, base their advice on comparisons of countries' school-leaving qualifications. In the international context, "qualification" is defined more widely than in Kazakhstan's national law, to signify any level of attested knowledge, skills or achievement in any subject, academic or vocational. It is therefore relevant to ask how Kazakhstan's current school-leaving test or qualification, a UNT pass, would be regarded by the NARIC network.

The UK NARIC has advised the review team that the UNT would be regarded as demonstrating a lower standard of knowledge and skills than England's main school-leaving and university entry qualification. It would also be regarded as below the standard of France's *Baccalaureat*, Germany's *Abitur* or the exams that qualify for university entry in most European countries. Part of the difference, but not all, is explained by the higher school-leaving age in these countries – 18 compared to 17 in Kazakhstan. The UNT pass would also not be regarded as demonstrating a standard comparable to Scotland's Higher Certificate, taken at 17 after 12 years' schooling, which gives access to 4-year Bachelor's degrees in that country. The key word here is "demonstrating". The European exams just mentioned give pupils opportunities to show what they have learned in a way the UNT does not. The UNT does not cover all the core subjects students have learnt, and contains only multiple choice questions. These can be answered correctly by luck rather than judgement and do not allow candidates to show their range and depth of subject knowledge and their ability to apply it – as they could in an extended essay or by solving a complex maths or science problem. Another problem with the UNT is that it is not calibrated, or otherwise adjusted, to ensure that a pass score or a given mark is associated with the same level of knowledge and ability from year to year. These factors may explain why, as the National Education Report (Damitov, *et al.* 2006) pointed out, passing the UNT does not give school leavers a qualification recognised in the labour market. Consequently, many young people see university as the only way to acquire a marketable qualification.

The review team learnt from Kazakhstan's education minister that the new 12th year of schooling is to cover the same ground as the first 18 months at university. Introducing this new 12th year curriculum should therefore allow Kazakhstan to equip its school leavers with knowledge and skills standards comparable to those of 18-year-olds in Europe. This also gives Kazakhstan an excellent opportunity to introduce, in place of the UNT, a new improved school-leaving qualification or certificate, which will (a) stand comparison with other countries' 18-year-old school leaver

qualifications, giving Kazakhstan 18-year-olds easier access to international higher education, and (b) show Kazakhstan universities and colleges, as well as national and international employers, that school leavers' knowledge and skills have reached such a high level that they can achieve a Bachelor's degree in three years. This should help improve Kazakhstan 18-year-olds' access to employment and tertiary level education and training within the country.

The review team recommends that Kazakhstan seizes this opportunity to develop a new school-leaving exam, to test mastery of the newly extended secondary school curriculum and demonstrate high university admission standards. Though deficiencies in the UNT are recognised by many in Kazakhstan, including the MOES and the members of Kazakhstan's Parliament who met the review team, the ministry has been handicapped in reforming it by lack of test development capacity within the country. The team therefore suggests a separate follow-up project, involving international curriculum, qualifications and test development experts. Box 2.2 outlines general principles that should guide the development of this new Kazakhstan school-leaving exam.

Box 2.2 Towards an internationally competitive school-leaving exam: principles drawn from the experience of England, France and Germany

The exam should serve the interests of four groups: pupils, secondary schools, universities and employers/business. This is recognised in all three countries. For example, in France, the three main aims of the *Baccalauréat* (Bac) are stated as being to help pupils to develop their logical thought; their ability to express themselves; and their ability to work independently.

There should be separate exam papers for different subjects. All three comparator countries set at least one separate exam paper per subject, covering about 20 to 30 different subjects, with any one paper typically taking about 3 to 4 hours. In some subjects there is also a practical/oral exam. This not only gives a better picture to future employers of pupils' achievements in secondary school, it is also more valuable for entry to university.

There may be a "core" of exam subjects that all students are required to take, to ensure that students have a good range of subjects in secondary school. There is a core of six subjects in France and three in Germany. There are also other rules in Germany which ensure that all pupils study a range of subjects. In these countries the core subjects are normally required to be taken at the "basic" level, with options to take additional basic subjects as well as some subjects at "advanced" level. However, there are no compulsory subjects in England's A-levels.

The results of the exams in each subject should be made available on a subject by subject basis. All three countries give the results for each subject taken in the exam, with grades for each subject (typically in a range of 5 or 6 grades). This provides pupils with a good assessment of what they have achieved in secondary school, and the subject grades are also

useful in the university entrance process. In addition, in France and Germany, the subject grades are added together (using a weighting system and with one or two other factors) to give an overall score for the Bac/Abitur. This score forms part of the secondary school leaving certificate and determines whether the pupil has "passed or failed" in overall terms; the level of the overall score also determines, with some other rules, whether a pupil is allowed to resit (some subjects in) the exam and also determines their "right" to enter higher education in some way.

In England, there is no overall score, but university entrance requirements are often stated as requirements for a specified performance level in some or all subjects.

The subject exams should include only very few multiple-choice questions; mostly they should use "open" questions requiring pupils to show their reasoning and writing skills. In France and England there is very little use of multiple-choice questions. These are more common in Germany only because educational responsibility rests with the States, or Länder, which need to find a way to compare performance. Multiple-choice questions are not able to assess the ability of pupils to develop a logical argument, to write coherently or to be creative – all of which are important skills both for university study and for the labour market. Also, pupils can be trained in techniques for answering multiple-choice questions, which can therefore hide whether pupils really understand the content of the subject. This is unhelpful for university entry, for the labour market and for secondary schools.

Subject exams should be devised by a specialised national agency, but with substantial input from practitioners. In all three countries, for each subject, "subject groups" are formed to develop exam papers. The groups comprise secondary school teachers, school inspectors and university academics – and occasionally people from outside the education system. The central exam body (or bodies) is responsible for putting questions together into the final papers.

The assessing and marking of pupils' exam papers must be objective, fair, anonymous and cross-checked. All three countries have developed strong procedures to ensure that the exams are marked in a way that is both fair and objective. In France and England, examiners are recruited on contract (and paid) for a short period each year just for the purpose of marking the exams. They are mainly school teachers or university academics, and they are not allowed to mark papers from any schools with which they have any connection. Each exam candidate is given a number, so no examiner knows whose exam he/she is marking. Two checks are applied to the examiners: first, a random sample of papers that each examiner marks is re-marked by another examiner (anonymously) and if any errors or bias is found, all his/her exams are re-marked; second, the results for each examiner are plotted on a graph to check if they are, in distribution, consistent with those of other examiners (in that subject) – and re-marked if they are not consistent. Inconsistency makes it unlikely that that examiner will be used again in subsequent years. Despite all this complexity, and much larger numbers of pupils than in Kazakhstan, the exam results are available to candidates about 2 to 3 weeks after the exam in France, and about 4-5 weeks in England.

There should be a system of appeal that is fair and is seen to be fair; and pupils who do not pass should have second chances. In France and England there is an appeal process in which candidates can ask for some or all of their papers to be re-marked; though there is a charge for this. The re-marking is done by an examiner who has not seen that candidate's paper before. The result can be an increase or a reduction in grade. There are very few appeals in either

country. Similarly, both France and England allow pupils to retake the exams, when the next cohort of pupils takes them. This avoids the injustice of a pupil's chances being blighted by illness or personal misfortune on the day of the exam; and, by lowering the stakes on that one day, reduces the risk of corrupt practices.

Source: Unpublished papers by Johanna Crighton, consultant to the OECD, and Quentin Thompson, consultant to the World Bank – adapted by the authors, 2006.

The only other evidence the review team could gather on admission standards was anecdotal. A number of those interviewed during the team's visits programme questioned whether all those who passed the UNT were really capable of benefiting from higher education. It was said that many appeared unmotivated, or to have chosen the wrong course, or to be uninterested in learning for learning's sake and only in higher education for the diploma. However, having spoken to the students themselves, the review team concluded that the main problem is not low admission standards, but the serious lack of advice available from schools to help students make their further education and career choices. Many relied on their parents, whose knowledge was out of date because of the pace of recent change in the education system. Recruiters confirmed this lack of career advice in schools, whether from schools themselves or from local employers.

Against this background, it is not surprising if students make sub-optimal decisions about their futures. They deserve better advice – delivered in secondary schools, but with employer input – on the careers available, the jobs, pay and long-term prospects in each, and the best routes into those careers. The best route may be college, higher technical school, or going straight into a job with in-service training, rather than university. Students also deserve better information about the implications of choosing particular subjects in the UNT or successor school-leaving exam recommended by the team, so that they choose subjects consistent with the future study and career that they are aiming for. Last, but not least, they deserve fuller, clearer and more transparent information about universities – their core curricula, options and how they organise study; the quality of their teaching and teachers as assessed by quality agencies; their facilities (accommodation, equipment) and study costs; the likelihood of grants being available in particular subjects; any special admission conditions, *e.g.* UNT score above a certain level; the subjects in which they are particularly strong and/or have particularly close relationships with employers; whether they teach to international standards and have international links; and their previous record of drop-out, degree success and progression to higher study and research. Better advice on career, education and training options, combined with the move to a 12th year, which will raise school-leaving standards, and

the new, better school-leaving qualification recommended in this report, could start to shift the current cultural expectation in Kazakhstan that children must go to university if they are to have a high status job and a good life.

Education standards on graduation

It is extremely difficult to assess the standards that Kazakhstan students reach by the end of university courses. Kazakhstan's higher education rating in the World Economic Forum's 2006 Global Competitiveness 1ndex – 51st – is respectable, if not particularly strong. Performance measurement in higher education is notoriously difficult and there are at present no international surveys that measure the performance of higher education students in different countries on a comparable basis, though OECD plans to introduce a "Higher Education PISA" (PISA – Programme for International Student Assessment).

It may well be that the outputs of the best of Kazakhstan's universities and research institutes are comparable with those of international counterparts. However, no Kazakhstan university features among the World Top 200 recently published in England (Times Higher Education Supplement, 2006), which is 40% based on peer review; and university teaching in Kazakhstan is not supported by a strong research and innovation base (see Chapter 8). Nor does any Kazakh university appear in the Shanghai ranking of 500 top universities, which is based on quantitative research output indicators. University visits suggested some cultural factors at work that may hinder achievement of the government's aim to boost the standing of Kazakhstan and its higher education system in world competitiveness rankings. In many places the team received impressions of university management and teachers resistant to change and complacent about quality and standards. Kazakhstan's special circumstances are too freely cited as a reason for disinterest in international practice. Too many in Kazakhstan higher education rely on Russia as a model, appearing to believe that achieving an education system nearly as good as Russia's will suffice – though in the WEF 2006 GCI, Russia is ranked lower than Kazakhstan overall, slipped further between 2005 and 2006, and is just eight places higher on higher education (World Economic Forum, 2006). Only at one institution – the Kazakh British Technical University – was there any evidence of eagerness to keep up with and ahead of developments in a fast moving and increasingly competitive global environment. Chapter 7 recommends measures to improve internationalisation and ensure that the country's higher education sector develops in line with international standards.

Linkages between higher education and the labour market

While meeting international standards is very important to global competitiveness and to students who may pursue their careers internationally, an even more important function of the higher education system is to produce graduates who meet the requirements of the national economy. This requires close dialogue between the higher education sector and the organisations that employ graduates, and a sustained effort to identify and respond to employers' needs. In Soviet times, the State was the only employing organisation that mattered and there was no great need for HEIs or central decision makers to engage with private sector employers. Now there is.

The review team found a very low level of contact between employers and higher education with regard to improving teaching and learning, compared to best international practice. As a MOES official put it, "employers and universities are on different banks of the same river". Employers and professional associations have no input into the State Educational Standards (SESs), which determine the core content of university courses, unless the university devising the standard decides to involve them. There is no system of regular meetings with the MOES so that they can influence policies and planning. Employers have no formal involvement in the higher education quality assurance system or in assessment. Change is needed in all these areas.

Some individual universities – mostly technical universities, or institutions associated with particular employment sectors – have developed good relations, involved employers in course delivery or quality assurance, and tried to adapt optional course elements to meet employers' needs. But universities' potential responsiveness is limited by MOES controls. Core elements of the standards cannot be changed (unless the university itself is contracted to write new ones) and, the review team was told, a university cannot offer a course in a new discipline without ministry permission. Other universities appeared to have very few regular or formal contacts – or did not think them significant enough to mention. It is vital to national competitiveness that individual higher education institutions forge and develop relationships with employers in all their subject areas; that these relationships are used effectively to identify ways in which the institution's courses might better meet employers' needs; and that HEIs have the authority and autonomy to adjust course accordingly. Best international practice is for universities, on their own authority, to respond to market needs as and when they emerge.

Graduates' success in finding jobs in their discipline is one of the bases for judging universities' performance. A low success rate lowers the

university's attestation score and could, in extreme cases, cost it its licence to operate. As already mentioned, universities collectively report 99% success, a figure so high as to be implausible. But to be able to say that a graduate has found employment, they only need a piece of paper signed by an employer indicating an intention to employ him or her. There is no check on whether the graduate takes up the job, or even on whether the paper and signature were genuine; and national surveys measuring employment status tell a different story. This dubious recording system enables higher education institutions to look good in terms of graduates' subsequent employment, without ensuring that their output meets employers' needs. It should, in the team's view, be replaced by a more objective system of follow-up surveys by independent statisticians (see Chapter 5).

Research links between higher education and employers are not well developed. Efforts have been made to encourage academics and local businesses to work together to develop commercial applications for scientific advances – including setting up Technoparks – but pay-off to date has been limited. Reasons include employers' risk aversion, scientists' problems with thinking commercially, mutual difficulties in communication, and limited scope for academics to be rewarded for their discoveries, particularly if at public universities. These research issues are discussed in more detail in Chapter 8.

The section above on *System output: lower tertiary* discussed a number of labour market problems centred on the low numbers and status of the colleges that provide lower tertiary education and qualifications. To address them, it is suggested that the colleges and the new higher technical schools planned by the government be designated part of the higher education sector; that output be expanded; and that better, clearer progression routes be developed between lower and upper tertiary qualifications. To assist this strategy, and improve the national and international mobility of Kazakh workers and students, it is suggested that Kazakhstan adopts a national qualifications framework incorporating a "ladder of qualifications". A national qualifications framework categorises qualifications, whether academic or vocational, by broad level, so that equivalences between different subjects and qualifications are understood, and progression routes up the "ladder of qualifications" are clear. In Kazakhstan the ladder would start with the new secondary school-leaving certificate recommended in this report and with skilled worker qualifications, and go up through college diplomas at Technician level to Bachelor's and higher degrees. It would be particularly helpful for international mobility if this national framework mapped onto the recently adopted European Qualifications Framework (EQF), which Russia proposed at the 2006 G8 meeting to develop into a World Qualifications Framework. In the EQF, 18-year-old school-

leaving/higher education entry qualifications such as the French *Baccalauréat* and German *Abitur* are Level 3; sub-degree, but tertiary VET qualifications are Level 4 or Level 5; and Bachelor's degrees are Level 6. In European countries, such as the United Kingdom and Ireland, college students who achieve a Level 4 VET qualification know that they can enter a higher education course in the same subject and complete it in much less time than another entrant who only has Level 3, because their previous study is fully credited. Kazakhstan's move towards a credit-based system in higher education has paved the way towards a qualifications "ladder" from college to university.

In recommending that college provision be expanded, to bring lower tertiary and upper tertiary output into better balance, the review team is not saying that all employers' needs for skilled workers and technicians must be met solely by the public vocational training system. In Kazakhstan, compared to the world's most competitive countries, very little training is provided by employers, individually or collectively. National employers still tend to expect that, as in Soviet times, the state system will deliver recruits fully prepared with the sometimes very specific skills they need. This legacy may explain why university courses were divided between hundreds of very narrow specialties – until very recently, when the government moved to fewer broader specialisms. The speech by President Nazarbayev on 8 December 2006 calls for a change in employers' traditional attitudes. He is reported as saying "The time has come for foreign investors and local entrepreneurs to assume social responsibility in education" and "business should not restrict itself to the passive role of some education services consumer" (Interfax, 2006).

In the review team's view, the more narrowly vocational are the skills imparted, the stronger is the case for asking the beneficiary employers to pay all or some of the costs of the training. An example of a narrowly specific skill useful to only one employer, which that employer could reasonably be expected to finance, would be assembly or repair of a specific brand of machine. A higher level example is training of medical doctors, where all doctors are employed by the state or a national health service. If, however, the skills are general or transferable, *i.e.* of use to more than one employer (for instance, welding or general computer skills), employers will be understandably reluctant to finance such training of workers, because it will make them more attractive to other employers. In other countries, the costs of such training may be met by the state, but there will often be a contribution by the trainees who see labour market advantage in acquiring general, transferable skills, and sometimes a contribution by employers collectively. Employers may contribute in different ways, but common ways include (1) establishing an industry arrangement whereby all pay a levy for

training costs into a central pot and those who train for themselves or others reclaim the cost; and (2) an incentive scheme, whereby the government subsidises their training or allows them to pay a special low "training wage".

The scope of this review did not permit detailed study of the types of lower tertiary training currently being undertaken in Kazakhstan colleges. A further project on colleges suggested above could include research to establish where colleges are providing training so narrow and specific that some or all of the cost should be borne by employers in the industry concerned, rather than through government grants or individuals' fees. Then that project could explore ways of obtaining a financial contribution from the relevant industry. This would pave the way for a suitable and fair apportionment of costs between employers, central government and local government, which is part of the vision in the draft National Programme to reform the Vocational Training System discussed in Box 2.1 above. Employers – especially in thriving sectors like the oil and extraction industries – may prove very willing to pay towards the tertiary training of employees and potential employees, if allowed a partnership relationship with training providers and influence over training objectives, curricula and organisation.

A greater employer contribution would liberate state funding to support more places on the sort of general, transferable skills courses that state systems *can* be expected to deliver, and that employers in the newer sectors increasingly want. Such courses aim to provide employers with flexible, trainable recruits who have broad rather than narrow skills that will not become obsolete with changes in technology and industrial structure; who can work independently, evaluate critically and solve problems and conflicts; who can use modern office technology, speak other languages and learn what they do not already know; and who have the social competences and characteristics valued in modern workplaces, including reliability, accuracy, integrity and loyalty and ability to work in teams. The review team learnt from visits that employers in Kazakhstan value and look for all these qualities, in university as well as in college graduates. Among the discussions HEIs should be having with their local employers, are how to include these elements in courses at all levels.

Findings

- The number of students now in HEIs in Kazakhstan is not excessive. It may be expected to drop when 12th year schooling is introduced, and drop again when the effects of falling birth rates feed through to the 19 to 24 age group from 2010.

- The system is producing too few graduates from scientific and technical courses in universities, but a bigger labour market issue is the inadequate numbers of graduates with lower tertiary vocational qualifications emerging from colleges.
- Government proposals to set up ten higher technical schools are sound, but to solve the problem, college output also needs to increase and other system reforms, such as those suggested in this report, need to be implemented.
- Kazakhstan higher education institutions vary considerably, in size/viability, quality of facilities and support services, expectations of students, quality of management and tolerance of corruption.
- The number of institutions in the higher education sector at present is not excessive in itself, and the team found no evidence that private institutions perform worse than public, allowing for differences in intakes and financing; but future falls in student numbers will put pressure on the smaller weaker HEIs.
- There is scope for rationalising the sector and losing the weaker elements, by a combination of quality thresholds, greater transparency and market forces.
- There may also be merit in designating some "elite" universities. The way the elite are chosen should match the aims to be achieved.
- The Unified National Test (UNT) has disadvantages, both as a school-leaving test and as a higher education entry test. It does not enable students to demonstrate all that they have learnt at school, or give them a recognised qualification for labour market or international higher education entry; it does not keep admission standards constant or comparable from year to year; and it raises equity and security issues. The introduction of the 12th year is the chance for reform.
- There is a serious lack of information and guidance in schools to help young people make the right decisions about careers, further education and which institutions to apply to.
- Standards achieved on graduation from higher education institutions are hard to assess. They seem respectable at present, but are at risk from complacency, conservatism and inadequate engagement with international developments.

- Compared to best international practice, relationships between higher education and employers are very limited, with adverse consequences for the economy.
- Statistics suggesting that graduates almost all find suitable employment are untrustworthy.
- Employers in Kazakhstan contribute very little to the costs of tertiary vocational training.

Recommendations

- Rationalisation of the higher education sector, when necessary, should be achieved by improving quality assurance (see Chapter 5) so that only deserving and well managed universities remain, and then allowing well informed students to choose the institutions likely to give them the best deal.
- Fuller, more objective, independent information and guidance should be provided during secondary education to help students make sensible further education and employment choices. Schools should deliver this with input from employers. (Follow-up project suggested.)
- A national curriculum should be developed for the 12th year that will equip school leavers in Kazakhstan with subject knowledge and skills comparable to those of 18-year-old school leavers in European countries. (Follow-up project suggested.)
- A new school-leaving exam should be developed that enables school leavers to demonstrate the standards of knowledge and skills they have acquired. (Follow-up project suggested.)
- To meet employer demand for graduates with lower tertiary vocational qualifications, college provision should be expanded as well as creating new higher technical schools.
- A number of other steps, outlined above, should be taken to boost the status and attractiveness of college tertiary vocational education, including making colleges part of the higher education system. (Follow-up project suggested.)
- To ensure that Kazakh qualifications at and above the level of the new school-leaving certificate are internationally recognised, and form a "ladder of qualifications" with clear progression routes up the ladder, a national qualifications framework should be developed,

reflecting national circumstances, but capable of mapping onto the recently adopted European Qualifications Framework. (Follow-up project suggested.)

- To enhance responsiveness to labour market needs, universities that are licensed and have passed institutional quality accreditation (see Chapters 5 and 6) should be free to decide, without seeking MOES permission, what subjects/courses to offer, how many places to offer in each, and what syllabuses to teach, provided they have consulted the relevant employers, who agree on the need for the courses and will help design and quality assure them. Universities should be free to withdraw or modify courses if employer or student demand dries up.
- Close relationships with and involvement of employers should be one of the criteria for institutional accreditation (see Chapter 5).
- An independent statistical system should be used to establish graduates' success in finding employment.
- To enhance transparency, accredited universities should also be free to award their own degrees/diploma certificates. Those licensed, but not yet accredited, could have diplomas issued either by the MOES, or by an accredited institution prepared to quality assure and vouch for them.
- Accredited universities, whether public or private, offering courses to meet employer-endorsed labour market needs should have access to the necessary funding, including for up to date equipment and facilities. If private sources or sponsorship cannot be found, the state should make funds available. The government could also consider designing a competitive fund to stimulate the development of modularised and competency based curricula at the decentralised level in collaboration with industry. (Follow-up project suggested.)
- For recommendations on strengthening the system, structure and labour market relevance of research and innovation in higher education, see Chapter 8.

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Chapter 3: Access and Equity

There has been strong growth in enrolment in tertiary education in Kazakhstan, but the proportion of tuition-free places in tertiary education has decreased. This chapter is concerned with access to the higher education system and analyses factors that affect the equity of access. It describes the increasing participation in the system, progress made to date regarding admission to higher education institutions, and the introduction and impact of the Unified National Test (UNT).

Review team recommendations to improve equitable access to higher education include addressing issues concerning the independence, quality, fairness and security of the UNT, and developing measures to increase opportunities for disadvantaged students and those from remote rural areas.

Transition and growth

Kazakhstan inherited the Soviet system of tertiary education where universities were, at least notionally, treated as homogenous and equal. This system benefited somewhat from affirmative action programmes for children of working class families, children from rural areas and children from some ethnic groups. While tertiary education was free of charge, access to tertiary education was, for the most part, in the hands of universities and institutions, which were able to control admissions through their own entrance examinations, a practice that was opaque and frequently inequitable.

During the early years of transition, demand for places in tertiary education increased steadily, creating new opportunities and challenges for the Kazakh tertiary education sector. Expansion of access to tertiary education rapidly became a priority for the Kazakh government. The new Constitution of the Republic of Kazakhstan guarantees citizens the right to free tertiary education on a competitive basis in public tertiary educational

institutions. The Constitution also regulates the provision of paid educational services in private tertiary educational institutions (Article 30, items 2 and 3). One consequence of this steadily expanding demand has been that higher education institutions (HEIs) have both increased and diversified, mostly in the form of private provision.

The discussion on equity in this chapter is focused on the policies that are needed to ensure that education services are made available to all, regardless of poverty, gender, location or special learning needs. However, it must be acknowledged that there are limits beyond which access to tertiary education cannot compensate for the disadvantages of inadequate earlier schooling or social circumstances. A useful framework, developed in the *World Development Report 2007* (World Bank, 2007), suggests that governments should also give priority to the skills and attitudes needed for individuals to succeed in a competitive environment, including the capability to access and manage financial resources and the availability of career choice and counselling and second chance opportunities.

Growing enrolment

In Kazakhstan, enrolment in tertiary education between 1999 and 2005 has almost doubled, although, as discussed elsewhere in this report, the proportion of tuition-free places in tertiary education has decreased.

Table 3.1 **Number of students in the higher education system in Kazakhstan, 1999-2005 (in thousands)**

	1999-00		2000-01		2001-02		2002-03		2004-05	
	000s	%	000s	%	000s	%	000s	%	000s	%
Total number of students	365.4	100.0	440.7	100.0	514.7	100.0	597.5	100.0	744.2	100.0
Full-time	226.2	61.9	254.5	63.5	288.2	56.0	300.3	50.3	349.6	47.0
Evening	2.8	0.8	2.1	0.48	1.9	0.37	1.8	0.3	2.3	0.3
Distance	136.4	37.3	184.1	41.8	224.6	43.6	295.4	49.4	392.2	52.7
Total number of students in private HEIs	94.4	25.8	126.9	28.8	182.5	35.5	256.0	42.9	344.2	46.3
Full-time	45.2	12.4	55.6	12.6	79.8	15.5	109.2	18.3	125.9	16.9
Evening	1.8	0.5	1.5	0.4	1.5	1.5	1.7	0.3	2.2	0.3
Distance	47.4	12.9	69.8	15.8	101.2	19.7	146.1	24.5	216.2	29.1

Source: Narenova, M., *et al.* (2006), unpublished background report and presentation prepared for the review team; UNICEF IRC (2006), *TransMONEE 2006 database*, UNICEF IRC, Florence.

Table 3.2 **Participation rates in tertiary education in Kazakhstan**

	2000	2001	2002	2003	2004	2005	2000 =100
Population age 19-24	1 546	1 565	1 588	1 614	1 646	1 681	
Full-time enrolment	226.2	254.5	288.2	300.3	n.a.	349.6	154.6
Distance	136.4	184.1	224.6	295.4	n.a.	392.2	287.5
Evening	2.8	2.1	1.9	1.8	n.a.	2.3	82.1
Total	365.4	440.7	514.7	597.5	n.a.	744.1	203.6
Gross participation rates							
Full-time	14.6	16.3	18.1	18.6	n.a.	20.8	
Distance	8.8	11.8	14.1	18.3	n.a.	23.3	
Evening	0.2	0.1	0.1	0.1	n.a.	0.1	
Total	23.6	28.2	32.4	37.0	n.a.	44.3	
Public enrolment							
Full-time	181	198.9	208.4	191.1	n.a.	223.7	123.6
Distance	89	114.3	123.4	149.3	n.a.	209	234.8
Evening	1	0.6	0.4	0.1	n.a.	0.1	10.0
Total	271	313.8	332.2	340.5	n.a.	432.8	159.7
Private enrolment							
Full-time	45.2	55.6	79.8	109.2	n.a.	125.9	278.5
Distance	47.4	69.8	101.2	146.1	n.a.	216.2	456.1
Evening	1.8	1.5	1.5	1.7	n.a.	2.2	122.2
Total	94.4	126.9	182.5	257	n.a.	344.2	364.7
Gross public participation rates							
Full-time	11.7	12.7	13.1	11.8	n.a.	13.3	
Distance	5.8	7.3	7.8	9.3	n.a.	12.4	
Evening	0.1	0.0	0.0	0.0	n.a.	0.0	
Total	17.5	20.1	20.9	21.1	n.a.	25.7	
Gross private participation rates							
Full-time	2.9	3.6	5.0	6.8	n.a.	7.5	
Distance	3.1	4.5	6.4	9.1	n.a.	10.9	
Evening	0.1	0.1	0.1	0.1	n.a.	0.1	
Total	6.1	8.1	11.5	15.9	n.a.	18.5	

Source: Authors' calculations based on single year demographic projections supplied by the World Bank.

Increasing participation

Table 3.2 shows that these rapidly increasing enrolment rates have resulted in gross participation rates of 44.3% of the 19-to-24-year-old population.

Table 3.2 also shows that, during this period:

- Full time gross participation rose from 14.6% in 2000 to 20.8% in 2005. During the same period, full time participation in private education grew from 2.9% to 7.5% in 2005.
- Participation in distance education grew from 8.8% of the age cohort in 2000 to 23.3% in 2005, an increase of 187.5%.
- The greatest increase was enrolment in private distance education, which grew from 47.4 thousand students in 2000 to 216.2 thousand in 2005, an increase of 456.1%.
- Fifty-three per cent of all students study part time. This is a relatively high percentage in OECD terms.

These participation rates, which are a good indicator of the accessibility and of the perceived value of attending tertiary education, are approaching the OECD average of 53% in tertiary type A (degree level courses) for high income countries (OECD, 2006a). However, caution needs to be exercised in the interpretation of this data in Kazakhstan because the enrolment rates on which they are based do not provide information on lifelong learning or on the second chance opportunities which might be available through distance or evening class provision. Anecdotal evidence from discussions during visits to HEIs would suggest that many of those enrolled in both distance and evening classes do include either those who are entering as mature or second chance students or those who wish to take a second degree in a different subject or who are sponsored by employers. However, the dearth of information on the students who are enrolled in distance education and on the numbers who take first level degrees makes evidence-based education policy making very difficult.

Not surprisingly, there are regional variations in participation which are discussed below.

Progress to date

As the data shows, since 1996, Kazakhstan has made significant progress in increasing and broadening participation and improving student choice. Two policies, in particular, have improved access to tertiary

education for the less well off and for those from rural areas. They are: (i) the development of new procedures for admission to tertiary education (the Unified National Test or UNT); and (ii) the introduction of a series of financial measures to assist students with the costs of their education.

Admission to tertiary education institutions

Admission to tertiary education, formerly the responsibility of HEIs, is now based on the results of the UNT, which was introduced at national level in 2003/4. The UNT, which is approved by the MOES, is an attempt to implement a corruption-free, transparent admission procedure. All tertiary educational institutions are obliged to comply with UNT regulations, which are published in the national press, as well as on the website of the ministry. The test is administered simultaneously and is administered and marked using advanced information technology.

The UNT is designed to be taken by students leaving secondary schools. There is also a Comprehensive Test (CT), which is taken by graduates of secondary schools of former years, graduates of initial and secondary vocational schools, graduates of secondary schools who studied abroad as part of school exchange programmes and graduates of secondary schools with the Uzbek, Uigur, and Tajik languages, who did not take the UNT. The CT is administered using the same procedures as the UNT.

The UNT can be taken either in Russian or Kazakh and is based on the curricula of general secondary education in four subjects, three of which are compulsory: Kazakh or Russian; Kazakh History; and Mathematics. The fourth "profile" subject is chosen by the student on the basis of career choice. Each subject has 30 multiple choice questions with one point for each correct answer. Three hours are allotted to complete the test and repeats are not allowed. Results are evaluated based on a 120 point scale, *i.e.* a possible maximum of 30 points for each of the 4 subjects. A minimum of 50 points is required for admission to tertiary education, with at least seven points in the profile subject. Admission to medical schools requires a minimum of 60 points. Applicants with at least 30 in the UNT may be admitted to second level vocational education institutes or to colleges, while those with scores of around 30 or a little less seem to go to first level vocational education institutions.

Public educational grants and scholarships

Kazakhstan has introduced public educational grants which provide selected students with access to the institution of their choice. By 2006,

32 500 public educational grants were awarded, 60% to Kazakh-speaking students and the remaining 40% to Russian speakers. These grants are awarded by the Ministry of Education and Science by state orders to winners of "Altyn Belgi" medals, to Olympiad winners and, on a competitive basis, and based on state orders for specific disciplines and languages, to students who have passed the UNT with the minimum score. In 2006, that score was 50 points, up from 40 in 2005. The potential implications of rising UNT pass rates for rural students' ability to access grants are discussed below.

Quotas have been established for awards of public education grants, as follows:

- 30% of the state order to rural students for priority social and economic disciplines;
- 2% to Kazakh ethnic nationalities who are not citizens of Kazakhstan;
- 0.5% to disabled children;
- 1% to orphans and children without parental support.

These quotas are applied in descending order of scores *after* students in these categories who pass the UNT are admitted. In the case of equal scores in the UNT, orphans and children who need special support receive preferential treatment, as do Kazakh children who are citizens of other countries, foreign citizens and persons without nationality who permanently live in Kazakhstan, as well as citizens of the Russian Federation, the Republic of Uzbekistan, the Republic of Tajikistan, and Kyrgyz Republic.

In addition to the educational grants scheme, there are a number of scholarships available, including: (i) in 2005, some 1 000 Presidential Scholarships were awarded to the most talented graduates and postgraduates of tertiary educational institutions; and (ii) Presidential Specialised Scholarships which are awarded to students of public and private HEIs, in their last year of full time undergraduate education, based on their overall academic performance. If they qualify, education grant holders are eligible to receive state scholarships in addition to their grants. In 2005, the value of these scholarships increased by almost 80% over 2004. Travel expenses are also included for university and college grant and scholarship recipients, a very important issue for students who come from rural regions. Chapter 4 discusses equity issues around the student loan programme, grants and scholarships. Chapter 7 describes the Bolashak Programme in more detail.

Lists of grant winners are published in the national mass media. Individual HEIs handle admissions based on applications from successful grant holders.

Finally, as a means of promoting lifelong learning, the government has created a set of incentives for employers to provide assistance to staff members wishing to study at tertiary level whereby companies are encouraged to develop their own training and educational programmes. Social partnership arrangements are being put in place in order both to attract private sector resources to adult training and also to address the need for more qualified workers discussed in Chapter 2.

Issues that affect equity and access

Corruption

While there is widespread acceptance that the UNT is a better instrument than the former system of university controlled admission, there is also distrust in the security and fairness of the test, expressed in many newspaper articles and other public fora. This distrust was articulated to the review team by students, teachers and university management whose concerns were partially because the UNT is not calibrated, as discussed elsewhere in this report, but chiefly because of the security questions that surround its design and administration.

Although the administration of the school Olympics competitions is reputed to be above reproach, the numbers of students who received the "Altyn Belgi" Gold medal in 2004 increased five-fold, indicating either a sudden rise in the quality of graduates or a decrease in the award criteria. Given the privileges and advantages accruing to holders of this medal in their subsequent academic career, a closer scrutiny of the award procedures would seem in order (OECD, 2006a, p. 29).

Naturally, some universities would prefer to continue to hold their own entry examination and to have good quality institutions enrol their own selected students as in the past. Among some university managers there are genuine worries that corruption has become endemic at a national level in the UNT and that, because some individuals have found ways to bypass examination security, it is not possible to select students based on their ability. A view expressed in some universities is that Kazakhstan has gone from one extreme to the other and that, currently, because HEIs are not allowed any freedom in whom they may enrol, public grants cause distortions in enrolment patterns at both national and regional levels.

However, these views were expressed by a minority of stakeholders interviewed. For the most part, there is broad consensus that the UNT is a better instrument to measure education outcomes at the end of formal

schooling and is a more equitable admission method than the individual university examination. There is, however, general agreement that the quality of the UNT needs to be improved.

The same set of issues about the integrity of the process surfaced in discussions about the Second Year Examinations within HEIs and also about practices in the preparation and examination of theses at post graduate level. It is the team's understanding that the MOES may be planning to abolish these examinations.

Access for the disadvantaged or rural poor

According to employment data, about 44% of Kazakhstan's workers are classified as low income, with 43% in the middle income bracket and 10 to 13% in the high income bracket. Given that about 84% of students currently pay tuition fees for public and private tertiary education, access for the less well off who are unable to qualify for a government grant is an issue (see Chapter 4). A national survey finds that 59.8% of high school leavers from poor families have no opportunity to continue education, 76% citing lack of money as the main reason (OECD, 2006a, Chapter 2).

Performance of rural and low income students in the Unified National Test

In 2004, mean scores in the UNT were 55.6 points for urban school leavers and 48.5 points in rural schools. Although unit costs in urban schools are lower than in rural schools, school leavers in Almaty and Astana had the highest scores in the UNT, while rural regions such as Mangystauskaya and Atyrauskaya, with the highest unit costs, have the lowest mean UNT scores. Moreover, the ratio of UNT mean scores to income levels indicates a link between levels of poverty and the urban/rural divide (Damitov, *et al.*, 2006).

As noted above, by 2006, 50 marks were needed to secure university entrance. It is entirely possible that this raised entry requirement, which is above the 2004 rural average, may also be militating against rural children and may mean that aspiring students are excluded from public grants, thus contributing to the urban rural divide. Better statistics and household surveys would make this judgment possible.

Gross participation rates and grant holders by region

Table 3.3 presents data from 2004 about who gained access to tertiary education together with the percentage, by region and age group, of those with state support. It will be noted that the data in Table 3.2 above suggest

that gross participation rates are considerably higher than those given in Table 3.3. It is not feasible to reconcile these estimates of participation at a national level, as it is likely that Table 3.3 does not include all the students registered in distance education. Moreover, the estimated regional participation rates divide enrolment in a particular location by the age cohort estimated to live in that location; students who move from one region to another to study without changing permanent residence will be counted in the numerator of the first region and the denominator of the second. Almaty Oblast has a very low participation rate, because most students who live there study in Almaty City, whose apparent participation is therefore grossly exaggerated. It is striking, however, that if these locations, together with Astana and Karaganda, are omitted, regional differences do not appear to be very large.

There are also regional discrepancies in the proportion of students who receive some form of public financing, but there is no clear pattern. The estimate of the proportion of the apparent age group who receive such financing is subject to the same limitations as the relative participation rate, therefore it is not surprising that it is much higher in Almaty than elsewhere. It is also possible to relate these data to an approximation of regional per capita income, gross value-added by region. This is a far from ideal measure of the actual incomes of the inhabitants of each region, especially in an oil producing country like Kazakhstan. But, if the oil regions such as Atyrau and Mangistau, with very high incomes, are omitted from the analysis, and if it is recognised that cities like Almaty and Astana, which can attract the best students, are likely to have a higher proportion of grant-aided students, then no clear relationship emerges between the average regional income level and the proportion of students who received grants in 2004 (Table 3.3).

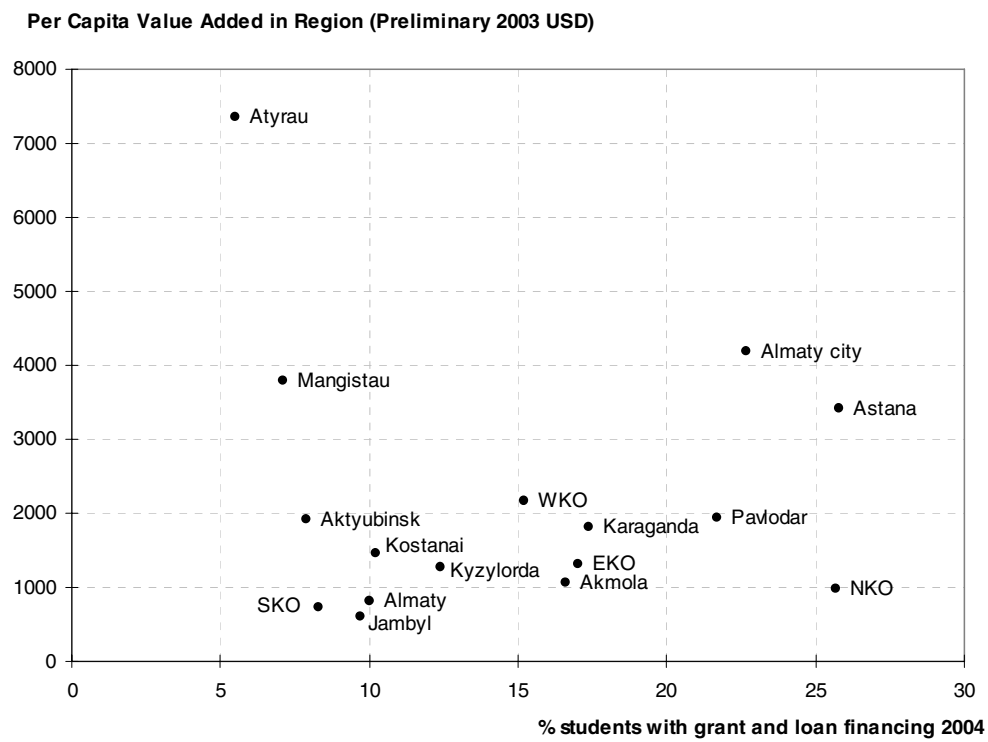
Table 3.3 **Patterns of access to tertiary education by region: 2004**

	Percentage Correct Answers 2005 UNT	% 2005 participants from elite schools	Gross Participation rates 2004	% students with grant and loan financing 2004	% age group with grant and loan financing 2004	Per Capita Value Added in Region (Preliminary 2003 US$)
Republic of Kazakhstan	**50**	**16**	**33**	**16**	**5.3**	**1 784**
Akmola	49	8.1	22.8	16.6	3.8	1 053
Aktyubinsk	47	10.3	33.8	7.9	2.7	1 912
Almaty	50	11.4	5.4	10	0.5	807
Atyrau	47	8.8	35	5.5	1.9	7 349
EKO	51	14.7	25.9	17	4.4	1 315
Jambyl	50	18	23.7	9.7	2.3	610
WKO	52	3.3	34.5	15.2	5.2	2 159
Karaganda	48	18	38.2	17.4	6.6	1 820
Kostanai	47	10.2	32.9	10.2	3.4	1 451
Kyzylorda	50	8.5	20.5	12.4	2.5	1 267
Mangistau	46	7.4	33.8	7.1	2.4	3 787
Pavlodar	54	11.4	30.5	21.7	6.6	1 938
NKO	50	18.5	17.7	25.7	4.5	988
SKO	51	14.3	30	8.3	2.5	737
Astana	59	35.1	40.4	25.8	10.4	3 414
Almaty city	57	39.3	101	22.7	22.9	4 183

Note: Elite schools are defined as schools other than comprehensive and boarding schools.

Source: Authors' calculations based on: demographic data; World Bank (2005b), *Republic of Kazakhstan Country Economic Memorandum – Getting Competitive, Staying Competitive: The Challenge of Managing Kazakhstan's Oil Boom*, Report no. 30852-KZ, World Bank, Washington, DC; and Damitov, B.K., *et al.*, (2006), "Natsionalniy doklad o sostoyanii i razvitii obrazovaniya" (National Report on the Status and Development of Education), National Centre for Educational Quality Assessment, Astana.

Figure 3.1 **Regional value added per capita and grant financing**



Source: Damitov, B.K., *et al.*, (2006), "Natsionalniy doklad o sostoyanii i razvitii obrazovaniya" (National Report on the Status and Development of Education), National Centre for Educational Quality Assessment, Astana.

Access to information and communication technology in schools and HEIs

The provision of access to education through ICT is a means of minimising the risk of digital divide and is, potentially, a source of knowledge and improved learning opportunities for different population groups. In addition to equalising access to good quality education, ICT can also improve the quality of teaching and learning for rural children. While there appears to be relatively good provision of ICT in Kazakh regions (about 76% of secondary schools can access the Internet according to the National Education Report [Damitov, *et al.*, 2006]), anecdotal evidence is that access to ICT has to be paid for, in both the secondary and tertiary

system. Moreover, in some institutions, students complain about the slowness of the Internet, which is probably attributable to the absence of broadband connections outside urban areas. Another complaint was that, although theoretically the Internet is available in many HEIs, in fact such availability does not always match students' needs.

Access from rural areas to tertiary education may also be affected by several other factors:

- Cost of transportation. As noted above, public grant holders' transportation is paid for. However, the largest proportion of grant holders is actually in the two main urban areas (see Table 3.3). In a large country like Kazakhstan, the cost of travelling to Almaty, the destination of most students, or to Astana from a remote rural region could act as a major deterrent for disadvantaged students.
- Availability of dormitories.
- Rising cost of accommodation in urban areas.

Quality of secondary education, especially in rural schools

Equality of opportunity for children in rural areas raises issues about the quality of primary and secondary education in small villages and disadvantaged areas. Fifty per cent of schools in Kazakhstan are in rural areas. Many of these are small multilevel schools with limited human and capital resources. In 2004, the biggest number of these schools were in North-Kazakhstan Oblast (region) (84.4% of the total number of secondary schools in the *oblast*) Kostanai, (72.5%); Pavlodar, (70.6%); Akmola, (74.4%); Karaganda, (51.6%); East-Kazakhstan, (58.8%); West-Kazakhstan, (67.8%); Almaty, (40.3%), all large *oblasts* with low population density. The lowest number of small schools is in the Southern and Western *oblasts* Kyzylorda, (32.9%); Atyrau, (24.1%), Mangistau, (14.5%) and Astana, (5.9%). Numbers of pupils in these schools are growing at the lower grades. However, numbers in grades 10 to 11 have been experiencing sharp declines (World Bank, 2005b).

Rural and poor children have fewer opportunities than urban children to access secondary education of good quality that would allow them to compete for the necessary medals or to prepare thoroughly for the UNT. Table 3.3 demonstrates a strikingly wide variation in average school performance among *oblasts*, suggesting that the variation for individual schools is even wider. Urban elite schools such as the *lyceums* in Almaty score over 70%, whereas comprehensive schools in East Kazakhstan score 49%. For comparison, in Finland, which has a successful and equitable

education system, there is less than 5% variation in student performance between schools according to the 2003 PISA data (OECD, 2004, Table 4.1a).

Table 3.3 also shows that, in 2005, 84% of participants in the UNT came from comprehensive schools. In every *oblast* these participants did worse on average than those from *gymnasiums*, *lyceums*, (including schools classified as "school-gymnasiums" and "school-lyceums") and boarding schools.[5] Excluding boarding schools (since these may take children from other *oblasts*), in Almaty City, only 60.7% attended these schools, and in Astana, only 64.9%. In several *oblasts*, the proportion was over 90%. Children from high and medium income families who are able to pay for private tutoring are better prepared for the UNT and comprehensive tests, thus gaining greater access to public education grants than children from lower income families. Success in these examinations is strongly influenced by the combined factors of stimulation and support from the family and from school. The assistance of parents and teachers concerns selection of a suitable study programme (more ambitious for a promising candidate or one less in demand for a weaker candidate), special preparatory courses, additional foreign language classes, etc. The winners in this competitive situation are the candidates who come from social groups characterised by all or some of the following factors: families with a tradition of attending tertiary education; families from large cities; affluent families (World Bank, 2005b, p. 16 and p. 30).

Moreover, there is also evidence that in Aktyubinsk, East Kazakhstan Oblast (EKO), Jambyl, Kostanai and Pavlodar there is a sharp rise in the number of drops-outs from tertiary education. Poor performance is the major reason cited for dropping out. Undoubtedly, the quality of the secondary education obtained in these regions contributes to the relative weakness of these students as they move on to compete at university.

5 A handful of participants in lyceum(s) in Zhambyl oblast and a boarding school in North Kazakhstan oblast are the only exceptions.

Table 3.4 **Drop-outs in the tertiary education system (share of students and undergraduates as a percentage of the total number)**

	2000	2001	2002	2003	2004
Republic of Kazakhstan	**13.6**	**14.1**	**13.2**	**14.7**	**15.6**
Akmola	10.8	7.6	10.4	6.0	10.1
Aktyubinsk	14.4	10.3	10.8	16.5	30.3
Almaty	11.3	15.1	20.6	17.4	13.9
Atyrau	13.2	11.4	11.2	10.3	10.6
EKO	13.2	15.1	15.0	15.4	21.8
Jambyl	15.4	14.2	12.7	9.7	28.4
WKO	16.5	15.6	13.4	38.8	11.9
Karaganda	14.3	14.4	14.8	14.6	13.9
Kostanai	11.1	13.0	13.7	13.0	22.0
Kyzylorda	7.7	11.7	15.8	13.4	8.5
Mangistau	15.7	22.0	13.8	24.1	15.0
Pavlodar	17.7	14.0	13.1	13.6	26.6
NKO	11.8	15.5	16.2	15.3	9.9
SKO	10.9	15.4	15.5	15.6	14.3
Astana	13.9	15.2	15.6	13.1	12.9
Almaty city	14.7	14.6	10.7	13.0	11.3

Source: Damitov, B.K., *et al*., (2006), "Natsionalniy doklad o sostoyanii i razvitii obrazovaniya" (National Report on the Status and Development of Education), National Centre for Educational Quality Assessment, Astana, Tables 6.32 and 6.33.

Other issues that affect the quality of education in rural areas are:

- The limitations that can be imposed by the UNT, which can "box" students in at an early age. Often rural children do not know how to choose their optional subject in the UNT, a choice which, as noted above, predicates their entire subsequent academic career. In the last cycle, for example, high numbers of students and their teachers chose geography – for its high pass rate and the credit this would reflect on the school – and lost the chance of studying physics, chemistry or engineering at university. A good career counselling system and information about tertiary education opportunities would mitigate this situation, as recommended in Chapter 2.
- The difficulty of attracting better educated and highly motivated teachers, and, for the higher grades, teachers with in-depth subject knowledge, to remote areas.

- The limited availability of wide subject choice, including mathematics, science and language choice.
- The cost of equipping small schools with essential inputs, such as libraries, science and language laboratories, and other teaching tools that complement the teacher.
- The availability of residential accommodation.
- The availability of good quality vocational education or second chance educational opportunities in the vicinity.

The way forward

Chapter 2 recommends the development of a new school-leaving qualification. This could also be the higher education entry qualification, as in many European countries. It could certainly set the minimum standard for higher education entry. However, the team doubts whether, in the longer term, higher education entry should depend solely on the results of a knowledge test – which may say as much about the quality of the school attended as about the pupils' ability – for two reasons. First, there is a need to address the access and equity issues around the UNT described above. These issues will remain as long as school performance and quality remain variable. Replacing the UNT with a better test of knowledge will not change them. Secondly, those high profile universities that now set higher entry thresholds (higher UNT pass scores) will no doubt wish to do so in future. As shown by the debate in England over whether A level grades are a sufficient basis for deciding between applicants to Oxford and Cambridge, it is very challenging to devise a test and marking system suitable for the whole pupil cohort, which also discriminates validly and reliably between the best and the very best.

One possibility might be to allow universities to set their own additional entrance tests. The review team does **not** recommend this. It would be very stressful for students and not resolve the access and equity issues; indeed, it might make them worse. It would be highly vulnerable to corruption, as happened in Russia where families have had to pay teachers both to prepare their children for the tests and to ensure that they pass: a 2001 study reported to the OECD Global Education Forum 2005 found that Russian university teachers earned more from these payments than from their salaries (Lenskaya, 2005). As Russian experience also demonstrates, it is not easy to persuade universities to give up the right to set their own tests. Kazakhstan is to be congratulated on having already made a total break from the inheritance of the university administered test, in a way that is happening

only slowly in Russia. Table 3.5 (fourth column) shows that most CEE-CIS (Central Eastern European-Commonwealth of Independent States) countries are now moving towards standardised university entrance tests, or are already there. Despite the UNT's imperfections as a test, the fact that it offers a single national independently marked higher education entry mechanism has brought considerable equity benefits, compared to previous arrangements. Kazakhstan should now build on these achievements and develop a more sophisticated university entrance instrument, as discussed below and in Chapter 2.

Table 3.5 **Status of assessment and examination system reforms in various CEE-CIS countries, 2006**

Status is reported on a general, 5 point scale as shown below.

0 – not planned/not started **1** – early planning/discussion stage **2** – development and experimentation [= small-scale trials] **3** – piloting [= larger-scale trials] and implementation **4** – operational **n.i. –** no information

	Establishment of new assessment authority	Reform of Matura/Baccalaureate examination	Introduction of other school exams or assessments *e.g.* basic school	Standardisation of university entrance examinations	Introduction of sample-based national assessment	Participation in international assessments (PISA, TIMSS, PIRLS)[3]
Albania	4	4	1	3	4	4
Armenia	4	3	2	4	0	4
Azerbaijan	4	0	0	4	1	4
Belarus	4	n.i.	n.i.	n.i.	n.i.	0
Bosnia and Herzegovina	4	1	1	1	4	0[1]
Bulgaria	1	1	0	0	0	4
Croatia	4	2	0	0	4	4
Czech Republic	4	3	2	0	0	4
Estonia	4	4	4	4	4	4
Georgia	4	4	4	4	4	4
Hungary	4	4	0	4	4	4
Kazakhstan	**4**	**1**	**1**	**4**	**1**	**0**[1]
Kyrgyzstan	4	1	1	4	1	4
Latvia	4	4	4	4	0	4
Lithuania	4	4	4	4	0	4

Macedonia	4	3	1	2	4	4
Moldova	2	2	1	3	4	4
Montenegro	3	2	1	1	3	4
Poland	4	4	4	3	n.i.	4
Romania	4	4	4	4	4	4
Russian Federation	4	4	2	3	1[2]	4
Serbia	4	1	4	0	4	4
Slovak Republic	4	4	0	1	0	4
Slovenia	4	4	4	4	4	4
Tajikistan	0	0	0	0	4	0
Turkey	4	0	0	4	0	4
Ukraine	4	4	2	4	2	4
Uzbekistan	4	0	0	4	0	0

1. Kazakhstan and Bosnia and Herzegovina will participate in TIMSS-2007.

2. Some regions (Samara, Vologda) are conducting some sample-based assessments at primary level, e.g. in mathematics and Russian language, but there are none at Federal level.

3. PISA – Programme for International Student Assessment; TIMSS – Trends in International Mathematics and Science Study; PIRLS – Progress in International Reading Literacy Study.

Source: J.V. Crighton, *et al*. (2006), personal communications; Godfrey, Martin, (in press), *UNICEF CEE and CIS Regional Study on Education 2006: Education for some more than others?*, UNICEF, Geneva.

International experience suggests that the best way to give equal chances to young people of equal ability who have had unequal preparation is to use a test of reasoning ability and learning potential, rather than accrued knowledge. This would also resolve other problems of the UNT, such as the way subject choice at university is constrained by choice of UNT optional subject. Useful models can be found in the SATs tests used in the United States, though these would need adapting to the circumstances of Kazakhstan, taking account of the lessons learned by the United States. Similar tests are being evaluated for use in admissions to British universities, in a five year project led by the National Foundation for Educational Research. Early signs are that SATs-type tests will prove at least as good at predicting university success as A level results. A SATs test suitable for Kazakhstan could be developed as part of the project proposed above to develop a new school-leaving qualification.

A middle way between relying solely on the new school-leaving qualification and relying solely on a SATs test, as in the United States, would be to follow the example of Georgia and combine the two. Box 3.1 outlines the reforms Georgia is introducing. In addition to subject exams,

that country is introducing a General Aptitude Test, which like SATs and the present UNT consists of multiple-choice questions, enabling it to be marked relatively easily and quickly using computer technology. Early indications are that this new system has both increased access for poor and rural students, and encouraged more international students to apply to Georgian universities. The review team sees the Georgian model as very suitable for Kazakhstan.

Box 3.1 University entrance exams in Georgia

A new model of University Entrance Examinations (UEE) was introduced in 2005 to combat corruption in university entrance and to reduce the inequities resulting from expensive private tutoring in preparation for university exams. The Ministry of Education and Science set up a National Assessment and Examinations Centre (NAEC), and it was decided to introduce three compulsory examinations – a General Aptitude Test (GAT), Georgian Language and Literature, and Foreign Language (English, German, Russian or French) – and one optional subject. Optional subjects (2006) were Mathematics, Science, Georgian History, Social Sciences, and Literature. Standardised scores (100 to 200) are used.

The GAT consists of multiple-choice questions, while the subject examinations have a mixture of question types, closed and open ended, as well as an essay. (Markers of open ended and essay-type questions were trained extensively.) A scaling model is used to equate scores of candidates who take different versions of the same subject exam, and faculties give "weights" to exam subjects by allocating coefficients to them. Each entrant for each faculty then has a "competitive score" (= the sum of all scaled subject scores multiplied by their coefficients) on the basis of which they can rank-order applicants. Results are recognised by all HEIs, although individual HEIs can determine "weights". Candidates are now able to apply to several faculties simultaneously. About 50% of applicants obtain a university place.

In 2006, there were 30 000 candidates each taking four exams. Administration of the exams is done in 14 exam centres in 10 cities throughout the country; these centres are closely monitored by trained supervisors and have video surveillance systems. Investments in information technology for registration, processing and barcoding proved to be important. Marked scripts are scanned into a database (120 000 scripts in 2006) and are placed on the NAEC web site so that candidates can see their own marked papers, thus ensuring maximum transparency and reducing the need for appeals; in 2006 only 0.6% of the total number of scripts were subject to appeal.

Early indications are that the new UEE has increased participation of students from rural areas and poor families, and that the number of non-Georgian applicants increased by 32% since the introduction of UEE.

Source: Johanna Crighton, consultant to the OECD, and Quentin Thompson, consultant to the World Bank, 2006.

Main findings

Kazakhstan has achieved useful reform to date, both in broadening access and in ensuring equal participation for all in its tertiary education system, in a number of areas:

- Government grants, scholarships and merit grants from individual HEIs enable about 16% of students to access tertiary education free of charge.
- Students (including public grant recipients) are allowed to choose where to study (whether public or private institution) and there is considerable diversification of provision throughout the system.
- The government has tackled the issue of perceived inequity in who gets into tertiary education by the introduction of the UNT and the quota system for rural students, Kazakh speakers, students with special needs and orphans and pupils without parental support.
- The development of a credit system (under way) will contribute to increased flexibility.
- A system of "ladders and bridges" is (at least theoretically) in place whereby access to tertiary education is possible from the two-year academic secondary school programme; from secondary professional training of 3 to 4 years duration in colleges; and from first level vocational education.

However, to help Kazakhstan ensure that all individuals have equitable access and to realise full development of all available human capital, the following further improvements are suggested.

Recommendations

Improve the independence, quality and security of the Unified National Test

Currently, there is no real confidence either that the UNT is sufficiently secure or that it assures sufficiently high standards (discussed fully in Chapter 2). Because this is a high stakes test that provides access to tertiary education, to public government grants and to scholarships, it needs to be substantially improved. A return to the old system whereby each university designed and administered its own admission procedures is not recommended. Instead this report recommends two interventions.

- In the immediate future, until introduction of the 12th year of schooling requires reform of the present UNT in any case, measures to ensure that the UNT is above corruption, and that its security is not compromised, would yield immediate results both in improving opportunities for young people and their families and in building public confidence in the education system in general.

- In the medium term, the review team recommends a different approach. The new school-leaving qualification recommended in Chapter 2 should set the threshold for higher education entry, but to address access and equity issues, demonstrate learning potential and allow for finer distinctions between the pupils able enough to be eligible for higher education, the main basis for decisions on admission to particular institutions should be either a common national test of reasoning and learning potential similar to the SATs used in the United States, or an additional General Aptitude Test as in Georgia. This should be developed for Kazakhstan with international experts. (Follow-up project suggested.)

Develop measures to assure equity of access and better quality of education for the less well off and for children in remote rural areas

The forthcoming introduction of the twelve year cycle will present an opportunity to review existing curricula and better adapt the secondary system to the needs of a knowledge economy. Meanwhile, programmes and interventions for those who are disadvantaged because the quality of secondary education has made it difficult for them to perform in an academic environment may take time to put in place. Nonetheless, there are some immediate measures which, if implemented on a system level, would be beneficial while longer term measures such as curriculum, pedagogical training and infrastructure reform are being developed. Specific recommendations are to:

- Design incentives to attract better educated and highly motivated teachers to remote areas, including those who can teach higher grades to the depth needed to enter and succeed at university. The review team was told of initiatives from some pedagogical institutes whereby quotas of grants to encourage training of teachers going to work in rural areas have been established.

- Review and accelerate the provision of fast and reliable Internet access. While this measure is being reviewed, it may be possible to borrow from the experience of Russia in the development of new

generation learning and teacher training materials for delivery using ICT.

- Provide better career information and guidance during secondary education, as suggested in Chapter 2. Pupils whose family backgrounds or geographical location make it difficult for them to access information about their choices in either the next level of education or in the labour market are at a considerable disadvantage. The increasing level of drop-outs (see Table 3.4) can no doubt be partially attributed to ignorance about individual aptitudes and availability of pathways to achieve them.

- Encourage mobility and flexibility. Government grants are targeted on priority subject areas and earmarked for specific disciplines that may lead to less freedom of choice of the optional subject in the UNT. However, although the UNT fourth subject dictates the individual's choice of university discipline, this situation is not unique to Kazakhstan. And there is some room for manoeuvre as, in some cases, after the Year Two university examination, students are able to change focus within their discipline, *e.g.* from a degree in one branch of science to another. This practice should be encouraged. The credit system could also help to promote mobility and increase opportunity. Having adopted the credit system, HEIs should provide students with more opportunities for mobility and for change within disciplines and between institutions.

- As no clear pattern emerges to indicate that grant financing favours access to tertiary education for urban families over rural ones, the review team recommends that surveys of households and/or school leavers should be periodically carried out in order to explore the rural access issue fully. One way to do this would be through household surveys of incomes and living standards, which of course have multiple uses; for example, an extra module or questions might be added to Kazakhstan's annual household budget survey. The information could also be obtained through tracer studies of school leavers, if these also contained information on parental residence, and occupation and/or income. If it is established that rural and poor children, especially from the poorer oblasts, are indeed at a disadvantage, special programmes could then be designed to target this group further, including remedial or UNT preparation courses.

- Finally, in the choice of policies to improve the equitable provision of pre-tertiary education services without affecting the quality, Kazakhstan might do well to study the experience of both Finland and Korea, countries that have scored highly in OECD PISA

assessments and which manage to combine excellent academic results with equitable treatment for all. A discussion of the key lessons to be learnt from both countries can be found in the boxes What's So Great About Finland and The Korean "Miracle" in the Lisbon Council Brief, The Economics of Knowledge: Why Education is Key for Europe's Success (Schleicher, 2006).

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Chapter 4: Financing

This chapter examines the availability of financial resources for tertiary education and the impact of the innovative reforms in tertiary education financing in Kazakhstan. Financing is discussed from aspects such as resource mobilisation, utilisation and allocation. The equity of the financing system is considered, particularly as regards funding for disadvantaged students.

The chapter closes with a series of findings and recommendations, including a recommended increase in the proportion of public spending for education and an increase in the tertiary education budget.

Introduction

The realisation of the government of Kazakhstan's ambitious plans to expand and modernise the tertiary education system hinges in part on the availability of financial resources. Since becoming independent from the Soviet Union, Kazakhstan has implemented a number of innovative reforms in tertiary education financing, including encouraging the rapid growth of private universities, introducing tuition fees in public institutions, setting up a voucher system to allocate public funds to public and private tertiary education institutions, privatising a number of public universities, and organising a student loan scheme in partnership with commercial banks. To assess the impact of these financing reforms, this chapter examines the following dimensions:

- resource mobilisation: is Kazakhstan investing sufficiently at the tertiary education level?
- resource allocation: are public resources distributed in a manner that encourages innovation and rewards performance?

- resource utilisation: are available resources used in an effective manner?
- equity: are public funds distributed among various population groups in an equitable way?

Resource mobilisation

Public spending for education remains low in Kazakhstan in spite of rapidly growing oil and gas revenues. Official statistics indicate that education accounts for less than 15% of total government expenditure, down from almost 20% a few years back. Within the education budget, the share of tertiary education is one of the smallest in the world, at less than 10%.

Table 4.1 **Education expenditures**

Year	Government Budget as % of GDP	Public Expenditures on Education as % of GDP	Education as % of Government Budget	Higher Education as % of Education Budget
1998	n.a	n.a	18.7	n.a
1999	23.1	3.9	16.8	n.a
2000	22.8	3.3	14.1	10.0
2001	23.0	3.3	14.0	9.1
2002	21.4	3.2	14.9	9.9
2003	22.5	3.2	13.9	8.5
2004	23.4	3.4	14.4	7.9
2005	n.a	3.6	n.a	n.a

Source: World Bank (2005a), "Kazakhstan Review of Public Expenditures and Investments (In Education and Healthcare Systems", unpublished document, Astana; World Bank (2005b), *Republic of Kazakhstan Country Economic Memorandum – Getting Competitive, Staying Competitive: The Challenge of Managing Kazakhstan's Oil Boom*, Report no. 30852-KZ, World Bank, Washington, DC.

If one attempts to benchmark the financial effort of Kazakhstan against the record of other countries, public tertiary education expenditures in Kazakhstan appear extremely low. As Table 4.2 shows, at about 0.3% of its Gross Domestic Product (GDP), Kazakhstan compares poorly with countries such as Malaysia, Thailand and China, and is well below the OECD average (1.3%).

Table 4.2 **Public expenditures on tertiary education**

Countries	Tertiary Education Expenditures as % of GDP
Denmark	2.5
Finland	2.1
Germany	1.2
Ireland	1.2
Korea, Rep. of	2.4
Sweden	2.2
United Kingdom	1.1
US	1.5
OECD Average	1.7
Kazakhstan	0.3
China	0.8
India	0.7
Malaysia	2.8
Russia	0.7
Thailand	0.8

Source: OECD (2006a), *Education at a Glance 2006: OECD Indicators 2006*, OECD, Paris; UNESCO (2005b), *Global Education Digest 2005: Comparing Education Statistics across the World*, UNESCO-UIS, Montreal.

To compensate for the low level of public funding, the government has adopted a multi-pronged resource mobilisation strategy involving the following three policy elements:

- rapid growth of private tertiary education;
- almost universal cost sharing in public universities and colleges;
- privatisation of some public universities.

Private tertiary education

In the early 1990s, Kazakhstan had only 39 tertiary education institutions, all of them public. In subsequent years, the government set up a unified regulatory framework that allowed for the establishment of private universities and institutes. This sub-sector grew fairly rapidly. Today, 109 private institutions operate alongside the 68 public tertiary education

institutions, enrolling almost half of the total student population of Kazakhstan.

Table 4.3 **Growth of private sector institutions and enrolment**

Academic Year	Proportion of Private Institutions (%)	Share of Students in Private Institutions (%)
1991-1992	0	0
1999-2000	68.7	25.8
2001-2002	77.0	35.5
2004-2005	61.4	46.3

Source: Narenova, M., *et al.* (2006), "Doklad po natsionalnoy politike v obllasti vysshego obrazovaniya Respubliki Kazakhstan" (National Policy in the field of Higher Education in the Republic of Kazakhstan, unpublished background report and presentation prepared for the review team.

Thus, a significant proportion of the increase in tertiary education coverage since independence has been made possible by the rapid growth of a private sector funded for the most part by the students and their families.

Cost sharing

In 1999, the government decided to replace the direct recurrent budget transfer to public tertiary education institutions with voucher-like education grants that beneficiary students can use to enrol in the public or private institution of their choice. But since government funding for recurrent expenses is sufficient to cover only about 20% of all full-time students in public universities and institutes, the other students enrolled in these institutions have to pay tuition fees equivalent to the amount of the education grant.

Thus, with the rapid growth of private tertiary education and the quasi-generalisation of tuition fees in public institutions, Kazakhstan has become one of the countries in the world with the highest level of private funding. Table 4.4, which presents the distribution of resources in terms of number of students by type of financial contribution, documents the growing share of private payments in the revenues of tertiary education institutions (both public and private), from 71.5% in 2000 to 84% in 2004.

Table 4.4 **Structure of revenues of tertiary education institutions**

Year	Public resources (through vouchers/grants)	Tuition Fees
2000	29.5%	71.5%
2001	23.0%	77.0%
2002	19.2%	80.8%
2003	17.7%	82.3%
2004	16.0%	84.0%

Source: Narenova, M., *et al.* (2006), "Doklad po natsionalnoy politike v obllasti vysshego obrazovaniya Respubliki Kazakhstan" (National Policy in the field of Higher Education in the Republic of Kazakhstan), unpublished background report and presentation prepared for the review team.

Table 4.5 compares the situation in Kazakhstan with those OECD countries that charge significant tuition fees.

Table 4.5 **Tuition fees as percentage of total revenues in selected countries**

Country	Tuition Fees as % of per capita GDP
Australia	34.8%
Canada	20.6%
Japan	60.3%
Kazakhstan	**84.0%**
Korea	56.7%
New Zealand	38.5%
United Kingdom	18.5%
United States	36.7%

Source: Narenova, M., *et al.* (2006), "Doklad po natsionalnoy politike v obllasti vysshego obrazovaniya Respubliki Kazakhstan" (National Policy in the field of Higher Education in the Republic of Kazakhstan), unpublished background report and presentation prepared for the review team.; OECD (2006a), *Education at a Glance: OECD Indicators 2006*, OECD, Paris.

Privatisation

The third, more recent pillar of financing reform has been a programme of partial or full privatisation of some public universities. In total, 16 universities have undergone this voluntary process, whereby a joint-stock

company is established and at least 35% of shares are sold to private companies or individuals. Out of the 12 universities that have been privatised so far, two are now completely private and others have 20 to 35% of government ownership. From the government's perspective, the partial or full transfer of ownership implies potential savings in terms of future capital expenditures for which the government is no longer responsible, in addition to the resources generated by the sale of shares and potential profits if the privatised university successfully operates on a profit basis. From the university's viewpoint, privatisation means increased independence from government administrative regulations and the possibility of adopting more flexible management practices.

Research funding

Notwithstanding increasing government interest towards science and technology, public R&D spending is small, both as a percentage of GDP and in absolute terms. It is also low relative to other countries with similar GDP per capita. For example, in 2004, India, with one third of GDP per capita, generates six times as much R&D spending as Kazakhstan (Table 4.6). China is constantly increasing its R&D expenditures, which represented 1.44% of GDP in 2004. Transition countries also spend more resources on R&D than Kazakhstan, including Russia (1.17%) and Ukraine (1.16%).

Most of the public funding for R&D (64.4%) is directed to the research institutes; only 30.4% goes to the tertiary education institutions. As a result, public funding for university research remains low (USD 23.2 million in 2004). The bulk of government funding for research goes to the public universities and research institutes (93%). A small number of recently privatised universities also receive some research resources, but overall State support for research conducted by private universities and institutes is insignificant.

Table 4.6 **Gross expenditures on R&D as % of GDP**

Countries	R&D as % of GDP, (2004 or latest available year)
Finland	3.49
Korea, Rep. of	2.64
US	2.60
OECD Average	2.24
China	1.44
Russia	1.17
Ukraine	1.16
Hungary	0.95
India	0.85
Poland	0.56
Kazakhstan	**0.25**

Source: OECD (2005b), *OECD Science, Technology and Industry Scoreboard 2005*, OECD, Paris; UNDP (2005), "Human Development Index", *Human Development Report 2005*, United Nations Development Programme, New York, pp. 219-222.

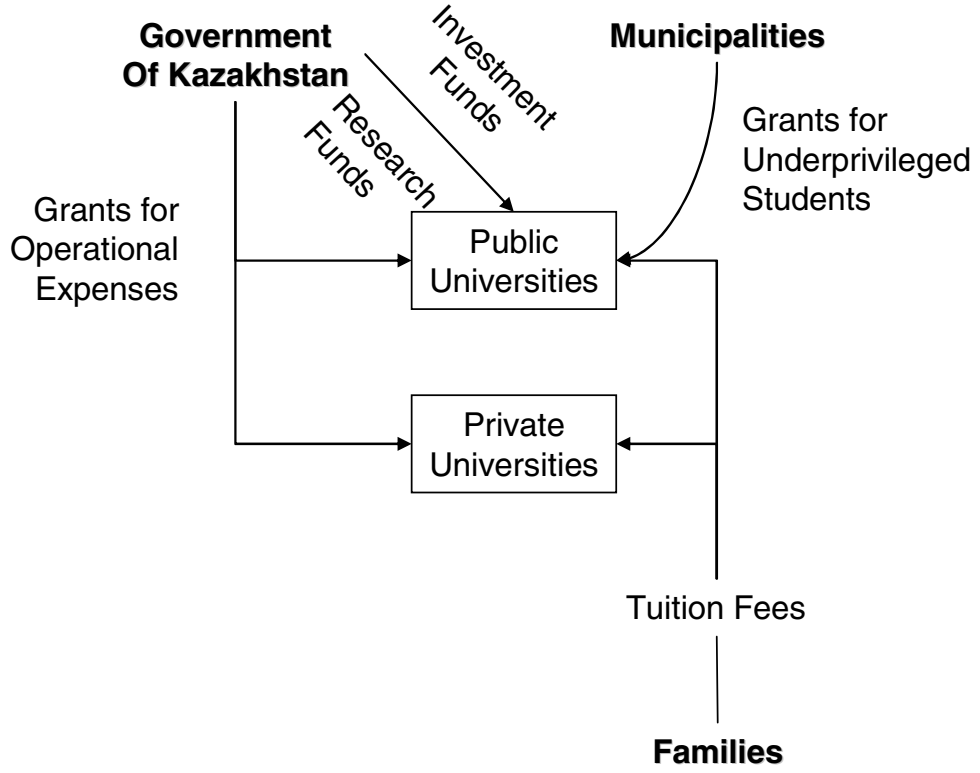
In conclusion, the government has adopted a wide range of innovative policies to mobilise additional resources for tertiary education. These valuable efforts notwithstanding, the overall level of public resources mobilisation still remains extremely low by international standards. Kazakhstan needs to significantly increase public spending for education in general, and for tertiary education in particular, not only to cover a larger proportion of capital and recurrent expenditures, but also to boost investment in university research.

Resource allocation mechanisms

Funding recurrent expenditures

Figure 4.1 offers a summary representation of the different ways in which public and private universities in Kazakhstan receive their resources.

Figure 4.1 **Flows of resources to universities**



Unlike many countries in the developing world that still rely on a traditional historical/negotiated allocation approach to distribute the budget among public universities, Kazakhstan has introduced an innovative, voucher-like system to distribute the lion's share of recurrent public resources allocated to tertiary education. Depending on the year, between 15 and 20% of the students receive voucher-like education grants that they carry with them to the public or private institution of their choice, so long as they choose to study a grant-carrying subject. For the students, eligibility is determined by their score in the highly competitive Unified National Test, which replaced the old system of university entrance exams, and their subject choice. For the tertiary education institutions, eligibility is a function of their standing with the quality assurance unit of the Ministry of Education and Science (MOES) and the subjects they offer.

Even after only a few years of operation, the voucher system appears to be functioning as an effective allocation instrument to reward those institutions that are perceived as better performing and offer national priority

subjects. All tertiary education institutions, public and private alike, are very attentive to their ability to attract education grant beneficiaries. The voucher scheme also seems to be a successful tool to promote the growth of the better quality private institutions. Some of the universities reviewed during the field visits were able to multiply the number of grant beneficiaries within three years. Interviews with students confirmed that they keenly sought information on the quality of institutions, including job prospects for graduates of these institutions, at the time of choosing their first university – even if, as mentioned in earlier Chapters, they could not always find it.

There are very few voucher systems around the world, which makes it difficult to compare the Kazakh approach to practices in other countries (see Table 4.7). On the positive side, Kazakhstan is more generous than any other country in offering equal or higher voucher amounts to students choosing to enrol in private universities. In fact, the highest voucher value (USD 4 000) is available for studies at the most prestigious private university in the country, Kazakh British Technical University.

At the same time, the voucher system has several aspects that need to be reviewed. First, only a minority of students can receive an education grant because of limited public resources dedicated to tertiary education. Second, the vouchers are available for priority fields selected centrally on the basis of employment projections (State Orders) defined by various government bodies without sufficient consultation with private sector employers. The limitations of traditional manpower planning have long been established. Third, there is a lack of clarity regarding the criteria applied by MOES to decide on the maximum number of vouchers a given university may receive and to modulate the amount of vouchers that go to various universities. The final drawback of the voucher system, in its present form, is that it pursues several objectives at the same time that are not entirely compatible: facilitation of competition among all tertiary education institutions (public and private), encouragement of priority fields of study, and financial support to students, particularly the disadvantaged.

Table 4.7 **Matrix of existing voucher systems**

Country or State	Year Establ.	Institutional Eligibility	Eligibility Criteria	% of total student population	Amount (equivalent in USD)	Comments
Bulgaria	2001	Public only	Master's level only	90%	1 300	Same per student amount for all institutions penalises more expensive research universities, in the absence of separate research budget
Chile (*Aporte Fiscal Indirecto*)	1981	Public and traditional private only	Top scores at national university entrance examination (bachelor's level only)	27,500 students (about 6% of total undergraduate population)	900	New private universities not eligible; selection through university entrance examination that is closely correlated with family income
Colorado (US)	2004	Public and private	Resident of the state	100%	2 400 (public) – 1 200 (private)	
Georgia	2005	Public and private	Bachelor level students with highest score at National Entrance Examination	8,270 students (about 58% of total student population)	800 on average	
Kazakhstan	2001	Public and private	Students with highest score at National Entrance Examination	14.6%	1 200 (public) – 4 000 (top private)	Working well to facilitate the growth of good quality private institutions and provide actual choice to students
US (GI Bill)	1944	Public and private	2 to 3 years of active duty	All former active duty soldiers, within 10 years of leaving the military	Up to 30 000 towards tuition expenses	

Source: Elaborated by the authors from World Bank sources.

Several options can be considered to address these areas of concern. To begin with, if the government follows the earlier recommendation to increase the tertiary education budget, it will be able to reach a larger share of the student population, thereby maximising the efficiency and equity impact of the voucher system. Furthermore, it would be advisable to clearly distinguish between the voucher and scholarship elements of the education grant by establishing a *separate scholarship fund* to attract students into study programmes of high national or regional priority, along the lines of the Bolashak Programme for overseas scholarships.

Investment funding

In addition to the core funding for recurrent expenditures provided through the education grants, MOES allocates some resources to the public universities and institutes to help with their capital investments. But the criteria to distribute these resources do not appear to be directly related to the performance of the recipient institutions or the soundness of their investment proposals.

The ministry provides extra-budgetary funding for special development projects. For instance, two universities, Almaty National University and Gumilov National University, have recently received USD 1 million each to finance the recruitment of foreign visiting professors. There is also a plan to allocate resources for new laboratories to a small number of public universities. It is not clear, however, that these special investments reflect a carefully spelled out strategic plan for modernising the Kazakh university system.

To allocate these types of investment funds, the government could consider the feasibility of using competitive funding as an alternative to the more traditional approach of assigning resources for capital investment on an ad-hoc basis. Under a competitive funding system, institutions are invited to formulate project proposals in the context of their overall strategic plan, proposals that are then reviewed and selected by committees of peers according to transparent procedures and criteria. Argentina, Bolivia, Bulgaria, Chile, Ghana, Hungary, Indonesia, Jordan, Mozambique, Sri Lanka are examples of countries that have established competitive funds in the past decade or so.

Competitive funds are typically established for the purposes of improving quality and relevance, promoting innovation, and fostering better management. The actual eligibility criteria vary from country to country and depend on the specific policy changes sought. In Argentina and Indonesia, for instance, proposals could be submitted by entire universities or by individual faculties or departments. In Chile, both public and private

institutions are allowed to compete. In Egypt, a fund was set up in the early 1990s specifically to stimulate reforms specifically within faculties of engineering.

A fundamental prerequisite for the effective operation of competitive funds – and one of their significant benefits – is the practice of transparency and fair play through the establishment of clear criteria and procedures and the creation of an independent monitoring committee. In countries with a relatively small or isolated academic community, it is desirable to draw from a regional or international pool of peer reviewers to reduce the danger of complacency and subjective evaluation among a limited group of national colleagues. Use of a transnational pool is a long-standing practice in Scandinavian countries and the Netherlands. One of the added benefits of competitive funding mechanisms is that they encourage tertiary education institutions to undertake strategic planning activities which help them formulate proposals based on a solid identification of needs and a rigorous action plan.

Research funding

Similar observations can be made regarding most of the research funding which is allocated through direct subsidies, with no performance-based criteria. Until now, the public science and research funding has been disbursed through MOES for basic research and the Ministry of Industry and Technology (MIT) for applied research. Most of the funding of MOES is allocated through direct subsidies to the research institutes and universities. The remaining portion is disbursed through competitive grants. However, the average size of the grant is small (USD 15 000), and the peer review of applications is conducted by internal bodies. The MIT allocates most of its grants for applied research through the National Innovation Fund that operates as a state-owned commercial institution that needs to be financially self sustainable. As a result, a very small portion of applications is financed and only in the areas that are considered to be profitable in the short term.

The current system of science and research funding is focused on inputs and tends to involve a high level of government regulation of research activities. For example, the government provides a list of priority areas for research financing that are considered of strategic importance for Kazakhstan. Only research proposals in these areas qualify for public funding. Additionally, the government issues a yearly state order for the number of PhD students needed. At the same time, the system of evaluation and monitoring of the result is only nascent. Since the funds are transferred to institutions, not groups of researchers, there is little accountability for results.

The current allocation system is under review, and the MOES will become responsible for the totality of public funding for scientific research, including both fundamental and applied research. The government is in the process of creating a number of additional institutions (Kazyna, National Science Fund, and the Science Committee of the MOES), which may add to the existing layers of bureaucracy. International experience indicates that science committees are most efficient when they have a relatively small number of members and are independent from government bodies.

To integrate its research universities better into the global research community, Kazakhstan could consider allocating more R&D resources on a competitive basis, providing special incentives for collaborating with foreign research institutes, universities and private companies, offering special R&D funding allocations that are not tied to undergraduate enrolment, and expanding the current pilot programme for attracting world class researchers and professors from abroad, much as South Korea, Singapore and China are doing today.

Box 4.1 United States' Los Alamos Nuclear Research Center

Leading nations with a strong science and technology sector finance R&D almost exclusively through transparent and open competition. Even funding for most strategic research areas, such as nuclear research, is allocated on a competitive basis according to pre-defined and objective criteria. For example, in 2005, the US Department of Energy launched a request for proposals for management of the world's most renowned nuclear center, Los Alamos. The grant was allocated for seven years with annual funding of around USD 2.2 billion. The contract may be extended to 13 years, based on the performance during the first period. After evaluating very competitive proposals, the government selected a team made up of the University of California and three large engineering and technology companies.

Source: The US Department of Energy: *www.energy.gov/news/2820.htm.*

To achieve these objectives, the following complementary measures could also be considered:

- reduce the existing layers of bureaucracy and develop a light management structure for science and technology funding independent from the ministries;
- increase the volume of competitively allocated financing and the size of grants;
- directly finance research projects and teams (not research institutes) through these competitive grants;

- establish an independent peer review mechanism with a combination of Kazakh and international members;
- reinforce the scientific and financial accountability of research teams;
- improve the collection and dissemination of information and statistics on S&T activities;
- conduct regular public consultations with the scientific community at large (not only the management of research institutes and research universities).

The experience of OECD countries indicates that one of the most effective ways of allocating research funds is to promote the development of centres of excellence at particular institutions specialising in certain fields. Centres of excellence have the potential of improving the relevance of research if the themes on which the centres focus accurately reflect national priorities and societies' needs. New Zealand and the Netherlands are examples of countries that have funded their academic research through centres of excellence. A number of states in the United States have also adopted this approach to supplement the research funding embedded in the core funding formula in a more specialised fashion. The China "211" project, the Brain 21 programme in South Korea, and the Millennium Institutes, recently established in Chile and Venezuela with World Bank funding, are also examples of how countries establish or boost research centres of excellence. In all cases, the selection of centres of excellence is based on a competitive process with clear and transparent selection criteria. Table 4.8 describes the most recent "excellence" initiatives implemented throughout the world. The decision to establish 15 laboratories of excellence, recently announced by the government of Kazakhstan, could be consistent with this kind of approach, provided the selection of recipient universities is made on a competitive and transparent basis and the financial and administrative regulations under which the centres operate are less constraining than prevailing procedures in public universities. A full analysis of this proposal is presented in Chapter 8 on Research.

Table 4.8 **Recent "Excellence in Research" initiatives**

Country	Number of Target Institutions and Eligibility Criteria	Resources Allocated	Investment Horizon
Germany Excellence Initiative 2005	40 graduate schools 30 Clusters of Excellence (universities and private sector) 10 Top level research universities	USD 2.3 billion in total	Five year funding Two rounds: 2006, 2007
Brain Korea 21 Programme	Science and Technology: 11 Universities • Humanities and Social Sciences: 11 Universities • Leading Regional Universities: 38 Universities • Professional Graduate Schools: 11 Universities	USD 1.7 billion in total	7 years Two rounds in 1999
Japan Top 30 Programme (Centers Of Excellence for 21 Century Plan)	31 Higher Education Institutions	USD 150 million a year	Launched in 2002
China 211 Project	100 higher education institutions	USD 18 billion in 7 years	Launched in 1996
Canada Networks of Centers of Excellence	19 currently funded Networks of Centers of Excellence 15 previously funded Networks	USD 77.4 million a year since 1999 USD 47.3 million a year in 1997-1999 USD 437 million in total in 1988-1998	Operating since 1988 Permanent programme since 1997
Denmark (Globalisation Fund)	Funds to be allocated to research universities on a competitive basis	USD 1.9 billion between 2007 and 2012	Launched in 2006
UK Funding for Excellent Units	Universities with the highest marks after the Research Assessment Exercise	USD 8.63 billion disbursed after 2001 RAE	Two rounds: 1996 and 2001
Chile Millennium Science Initiative	Groups of Researchers:	3 Science Institutes: USD 1 million a year for 10 years; • 5-12 Science Nuclei: USD 250 000 a year • USD 25 million in total in 2000-2004	Every 5 years for nuclei and every 10 years for institutes

Source: Elaborated by the authors from World Bank sources.

Lastly, several options exist for providing financial incentives to encourage collaboration between universities and the private sector, including: (i) funding centres of collaborative research that require private co-financing and leadership; (ii) matching private funds for the contracting of public research; and (iii) rewarding private-public collaboration as a criterion for allocating institutional funding to universities and research centres. Generally speaking, new programmes should be preceded by policy analysis and followed by evaluations to learn about the impact and need for further initiatives.

Resource utilisation

One of the major constraints in ensuring efficient resource utilisation comes from the tight government regulations that public tertiary education institutions are subjected to. Civil service regulations and the current line-item budget approach provide little incentive and flexibility to use available resources in the most efficient and effective manner. This problem, which is common in most countries with a dominant public tertiary education sector, is potentially more acute in the case of Kazakhstan, where the government actively encourages competition among public and private institutions through the voucher system and the privatisation movement.

To create a level playing field, the Kazakh authorities should allow public tertiary education institutions to operate under the same administrative and financial management rules as private institutions, including receiving the amount corresponding to the education grants and other government subsidies in the form of a block grant that could be used flexibly within the context of sound financial management practices. The field visits clearly showed that both the fully private universities and the partially privatised public institutions are able to offer better salaries and to manage their resources more efficiently than the regular public universities. The taxation conditions under which tertiary education institutions operate should also be similar for public and private institutions.

At the same time, there seems to be insufficient financial overseeing of private tertiary education institutions. It is recommended that all universities and institutes, public and private alike, be required to prepare annual financial reports that would be audited independently and would provide a more transparent picture of revenues and expenditures in tertiary education. The recommendation that all tertiary education institutions have a governing board with representatives from government and industry (see Chapter 6 on Governance) should also lead to better overseeing of management practices and resource utilisation.

The size of institutions represents another potential resource utilisation issue. In recent years, the government has been concerned about the proliferation of small private tertiary education institutions, fearing that they would not be able to achieve the critical mass needed to offer good quality programmes to their students. Available data (see Table 4.9) show that, with less than 1 200 full time students on average, private institutions are undoubtedly much smaller than the public universities, institutes and academies, which have 3 300 students on average. But it appears that there has already been a serious consolidation effort and the situation is much healthier, compared with an average of less than 400 full time students at the beginning of the decade.

Table 4.9 **Number of full-time students per category of institution**

Academic Year	Public Institutions	Private Institutions
1999/2000	3 419	396
2004/2005	3 272	1 155

Source: Narenova, M., *et al.* (2006), "Doklad po natsionalnoy politike v obllasti vysshego obrazovaniya Respubliki Kazakhstan" (National Policy in the field of Higher Education in the Republic of Kazakhstan), unpublished background report and presentation prepared for the review team.

Rather than attempting to define and regulate the appropriate size of private tertiary education institutions, which would be difficult anyway as it depends very much on the level and type of programme, a better approach for the government would perhaps be to make sure that the quality assurance mechanisms adequately identify poor quality programmes and that legitimate sanctions (conditional accreditation, closure) are strictly enforced.

In terms of utilisation of research funds, it should be noted that, in line with its ambitious aim to become one of the 50 most competitive nations in the world, the government of Kazakhstan has decided to increase the financing of science and research 25 times over the next five years. However, more resources alone will not necessarily produce the required results. Additional funds will have to be employed strategically, and followed by evaluations to assess their impact and guide future policies. Several aspects should be taken into account: (i) ensure that all Science and Technology (S&T) funding is transparent, peer-reviewed, and competitive; (ii) strengthen follow-up, monitoring and evaluation of S&T funding; (iii) provide funds for commercialisation and outreach activities of universities and public research organisations; and (iv) achieve maximum leverage of private funding by public investment through effective private-public partnerships.

Equity and student support mechanisms

Kazakhstan has placed itself, through innovative financing reforms, among the minority of countries in the world that have achieved high levels of cost sharing and succeeded in offering their students real choice opportunities. From an equity viewpoint, however, it is important to verify that there are no adverse effects as a result of these reforms.

With respect to the voucher system, the policy intention is that the beneficiaries of education grants are selected purely on merit criteria and that the Unified National Test does not discriminate against children from the least privileged backgrounds. But the data analysed in Chapter 3 suggest that the UNT success rate of children enrolled in different secondary schools varies widely. In particular, children from poor rural areas have significantly lower scores and pass rates – not least because they often attend smaller schools than those in richer urban areas. This would mean that access to the education grants is regressive.

To compensate for this possible social bias in the selection process, the government has decided to set aside up to 33.5% of the education grants for special category students (rural areas, disabled, orphans, ethnic Kazakhs returning to Kazakhstan, etc.). Need-based scholarships are also available from regional and municipal authorities. However, to benefit from the quotas the students must at least have achieved a UNT pass; access to affordable accommodation is also an issue. In the absence of information to assess whether this quota element is sufficient to offset the social bias in the selection process, the review team recommends an independent impact evaluation of the education grant system from an equity perspective.

Secondly, whenever private tertiary education institutions charge tuition fees that are different from the amount of the education grant that students receive from the State, it creates a situation of cross-subsidisation between state-sponsored students and fee-paying students. In some cases observed by the review team, institutions charge a lower rate to fee-paying students, which results in a positive redistribution effect. But in other cases there is an adverse equity impact because the fee-paying students subsidise students from rich families who benefit from the education grant.

The third and perhaps most important aspect that needs to be taken into consideration in this examination of the equity dimensions is the question of affordability for those students who do not benefit from an education grant and must therefore pay tuition fees. Again, the lack of specific data on the socio-economic origin of students by tertiary education institution and programme of study does not allow for a clear picture of the actual situation. But the range of tuition fees observed across institutions makes it highly

likely that a number of students from low and middle income families are hindered from choosing the more expensive universities.

Table 4.10 **Range of tuition fees in Kazakhstan**

	Tuition Fee Amount (USD equivalent)	Tuition Fees as % of per capita GDP
Lowest fees observed (private)	1 000	27.0%
Average tuition fees (public)	1 200	32.4%
Highest fees observed (private)	10 000	270.1%

Source: Survey of universities visited (September 2006); World Bank (2005b), *Republic of Kazakhstan Country Economic Memorandum – Getting Competitive, Staying Competitive: The Challenge of Managing Kazakhstan's Oil Boom*, Report no. 30852-KZ, World Bank, Washington, DC.

In fact, comparing the level of tuition fees with per capita GDP clearly reveals that the cost of studies is significantly higher in Kazakhstan than in OECD countries that charge tuition fees.

Table 4.11 **Tuition fees as percentage of GDP in selected countries**

Country	Average Tuition Fee in Public Institutions (USD PPP equivalent)	Tuition Fees as % of per capita GDP
Australia	5 289	16.7%
Canada	3 267	9.9%
Japan	3 747	12.2%
Kazakhstan	**2 759**	**32.4%**
Korea	3 623	16.6%
New Zealand	2 538	11.3%
United Kingdom	2 294	7.2%
United States	5 587	13.3%

Note: Tuition fees data for Kazakhstan are not in PPP, but the ratios are comparable.

Source: Survey of universities visited (September 2006); OECD (2006a), *Education at a Glance: OECD Indicators 2006*, OECD Paris.

Conscious of the possible adverse equity effects of cost sharing, the government set up in the mid-1990s a student loan programme managed by the then Ministry of Higher Education. It was a generous scheme, with no interest charged to the students and a long repayment period of 15 years

after graduation. But even with these favourable terms, the graduates did not feel compelled to repay the loan and there was little enforcement on the part of the ministry. The student loans were then converted into grants, at a high cost to the government.

A new scheme was recently established, involving five commercial banks working under the supervision of a public joint-stock company called the Financial Centre (FC). The banks offer loans at a discounted interest rate (14% compared to 23% for regular consumer loans). The FC provides a 50% to 95% guarantee for default, depending on the academic results of the applicant. The government guarantee applies only to the principal of the loan, as the commercial banks assume the interest rate risk themselves. The families of the student are required to put up a collateral guarantee (property or parental income). The banks are responsible for loan recovery. The capitalisation of the FC was calculated on the basis of a maximum default rate of 20%.

Thanks to this partnership with commercial banks, which allows the State to leverage private funds to finance the student loan programme, and the partial government guarantee against default, the new student loan scheme put in place by the Financial Centre appears to be well designed to achieve better financial viability than the previous, state funded system. It also has an important efficiency incentive built in, as the student loan beneficiaries need to maintain their good academic performance to keep the same level of guarantee from one year to the other.

But the real test of the validity of the design will come with the implementation phase. The Financial Centre will therefore need to monitor closely what happens in terms of take up by students and repayment after they graduate.

While it is too early to pass judgment on these operational aspects, as the new scheme has barely begun to operate, with an initial intake of 100 students only in 2006, there are some indications that more efforts are needed on the information front. The field visits and interviews conducted by the OECD review team with students, professors and university administrators revealed that there is very little awareness of the existence of the new student loan scheme. It will therefore be important for the Financial Centre to complement the existing information channels (posters, flyers, and website) with proactive information campaigns through the media (radio and TV ads and information programmes) and visits to tertiary education institutions all over the country. International experience suggests that a good information and marketing strategy to promote the student loan programme and ensure widespread awareness among eligible students and institutions is an important success factor (Salmi, 2003b).

The other demand aspect that could be much more problematic is the equity dimension of the scheme. In its present design, the new student loan programme does not seem to be accessible to those students most likely to need financial aid, for three reasons. First, low income students, by definition, have more difficulty meeting the requirement for collateral than students from wealthier families, which is the first screening criterion when they apply for a loan from the commercial banks. Second, even with interest rates significantly below those of regular consumer loans, there are indications that the student loans may not be affordable enough to meet the financing needs of low income students. Third, only tuition fee costs are covered by the student loan, which constitutes an additional barrier for low income students lacking the financial resources to pay for their living expenses.

The management team of the Financial Centre is aware of these equity issues and is exploring ways of addressing them. It has started negotiations with a university to run a pilot programme whereby the university would play the role of guarantor in lieu of the student's family. It is also looking into the possibility of transforming the loan scheme into a two-window programme. Students who have no problem with the collateral would get their loan under the prevailing conditions. Under the second window, designed to serve the needs of those students who would not be able to come with the required collateral, the government would be the guarantor and could even provide interest rate subsidies. Regardless of which approach the government may wish to pursue, it will be important to introduce provisions (collateral waiver, interest rate subsidy, etc.) to address the issue of affordability of the new commercial student loan scheme for the neediest students.

Should efficiency and equity issues become of concern as the new commercial student loan scheme comes into full operation, the government of Kazakhstan could explore the feasibility, in the medium term, of replacing the commercial student loan scheme with an income-contingent student loan system that would, in principle, be at the same time more efficient and more equitable. Since the mid-1990s, several countries (Australia, Canada, Ghana, New Zealand, Sweden, the United Kingdom) have adopted such income-contingent loan systems, sometimes referred to as graduate tax, in which loan repayments are a fixed proportion of a graduate's annual income (Salmi and Hauptman, 2006).

Although experience to date is limited, such systems can, in theory, achieve a better balance between effective cost recovery and risk to the borrower (Barr, 2004). Administration is generally simpler and cheaper under such schemes where loan recovery is handled through existing collection mechanisms, such as the income tax administration or the social

security system. Income-contingent loans are also more equitable and satisfy more fully the ability-to-pay principle, since graduates' payments are in direct proportion to their income. For example, the student support system in Sweden minimises the risk of student default by limiting repayments to 4% of income after graduation. In Australia, income-linked loan payments are made through the tax system, at a rate of 2 to 4% of taxable income, depending on how much a graduate earns.

Finally, in order to ensure an equitable distribution of public resources at the tertiary education level, it would be essential to put in place a reliable system to collect information on key personal and social characteristics of students (socio-economic origin, gender, rural/urban origin, ethnic origin, etc.). This information would be used to analyse the benefits incidence of public spending by looking at the distribution of public subsidies across various population groups. The results of this analysis would guide corrective policy measures as needed.

Main findings

Resource mobilisation

- Public spending for education overall remains low in Kazakhstan in spite of rapidly growing oil and gas revenues.
- The volume of government funding for tertiary education has increased significantly in recent years, but budgetary resources going to tertiary education institutions only reach a relatively small share of students (less than 20% of total student population).
- At the same time, however, the Kazakh government has been able to generalise cost sharing in public tertiary institutions.
- In addition, a significant proportion of the increase in tertiary education coverage since independence has been financed through a rapidly growing private sector funded essentially by the students and their families. In recent years, a number of public universities have been partially or fully privatised.
- Funding for university research has remained low.

Resource allocation

- The bulk share of public funding for tertiary education is allocated through a very innovative voucher-like system of education grants

that students carry with them to the public or private institution of their choice. The voucher system appears to have operated as an effective instrument to promote the growth of the better quality private institutions.

- However, one of the drawbacks of the voucher system, in its present form, is that it pursues several objectives at the same time that are not entirely compatible: facilitation of competition among all tertiary education institutions (public and private), encouragement of priority fields of study and financial support to students, particularly the disadvantaged.
- Much of the research funding is allocated through direct subsidies, with no performance-based criteria.

Resource utilisation

- Government regulations provide very little incentive and flexibility for public tertiary education institutions to use available resources in the most efficient and effective manner.
- There seems to be insufficient financial overseeing of private tertiary education institutions.

Equity dimensions

- There is a general perception that the beneficiaries of education grants are selected, by and large, on merit criteria and that the Unified National Test does not discriminate against children from the least advantaged groups. However, available data suggest that the success rate of children enrolled in disadvantaged secondary schools is significantly lower.
- To compensate for this possible social bias in the selection process, the government has decided to set aside up to 33.5% of the education grants for special category students (rural areas, orphans, etc.). Need-based scholarships are also available from regional and municipal authorities. It is not clear, however, that these arrangements remove all the inequities observed.
- Whenever private tertiary education institutions charge tuition fees that are different from the amount of education grant received from the State, it creates a situation of cross-subsidisation between state sponsored students and fee-paying students. This may result, in some cases, in adverse equity effects.

- The new commercial student loan scheme, established with partial government guarantee against default, appears to be well designed to achieve better financial viability than the previous, state funded system. But it does not seem to be affordable enough to meet the financing needs of low income students.

Recommendations

Resource mobilisation

- Kazakhstan needs to raise the proportion of public spending for education in GDP.
- To maximise the efficiency and equity impact of the voucher system, it would be desirable to increase the tertiary education budget, thereby reaching a greater share of the total student population.
- While there is no ideal formula to decide the optimal level of public funding, it would seem that the government could allocate at least 20% of the national budget for the education sector, and within this education budget, tertiary education could receive at least 15%.
- Funding for research needs also to increase. Most research funding should be allocated to research teams and projects on a competitive basis, with independent peer reviewing of research proposals.

Resource allocation

- It would be advisable to separate clearly the voucher and scholarship elements of the education grant by establishing a distinct scholarship fund to attract students into study programmes of high national or regional priority.

Resource utilisation

- Public tertiary education institutions should be allowed to operate under the same financial management rules as private institutions, including receiving the amount corresponding to the education grants and other government subsidies in the form of a block-grant that can be used flexibly within the context of sound financial management practices.

- Taxation regulations should be equal for all tertiary education institutions.
- All tertiary education institutions should manage their resources according to standard and transparent accounting practices, and prepare annual financial reports that would be audited independently.

Equity considerations

- There is a need to introduce provisions (collateral waiver, interest rate subsidy, etc.) to address the issue of affordability of the new commercial student loan scheme for the neediest students.
- The government of Kazakhstan may also want to explore the feasibility of setting up an income contingent student loan system that could, in principle, be more efficient and equitable than the new commercial scheme.
- In order to ensure an equitable distribution of public resources at the tertiary education level, it is essential to put in place a reliable management information system to collect information on key personal and social characteristics of students (socio-economic origin, gender, rural/urban origin, ethnic origin, etc.) that would be used to analyse the benefits incidence of public spending and guide corrective policy measures.

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Chapter 5: Improving Quality

In this chapter, recent reforms designed to improve the quality of the higher education system are discussed and the current approach to quality assurance is examined. Quality is analysed from angles such as quality in the educational process, the curriculum, the learning experience, outcomes of education and teaching.

The review team finds that quality improvement initiatives are not yet having the desired effect. The chapter recommends ways of making further progress, principally by moving from central control to institutional self-improvement.

Introduction

As discussed in the first four chapters of this report, Kazakhstan has advanced significantly in recent years in terms of access, relevance and quality of higher education. Modernisation efforts have encouraged growth and diversity in the sector, including the introduction of a unique funding system based on student vouchers. Other initiatives include the decentralisation of a number of decision making processes and the reform of the mechanisms for quality assurance and quality control of higher education. These changes have been part of Kazakh society's transition away from the centrally controlled higher education system inherited from the Soviet Union: the history is described more fully in Chapter 8. However, the review team found that the government remains cautious, and its policy somewhat ambiguous, on the question of whether to transfer to HEIs real responsibility for quality assurance of higher education.

The issue of how best to assure quality in higher education is not a new one. Since the first universities were born almost one thousand years ago, the tension between access and quality has been discussed within their academic bodies. In today's world, this tension remains. It comes to the fore

when government and institutional policy makers seek to provide access to as many students as possible, while also providing all of them with good meaningful higher education, in an increasingly competitive international context. Among the questions needing to be answered are: "How can the tension between access and quality be reconciled?" "How can the standards and relevance of what higher education institutions claim to offer be monitored and assured without limiting academic freedom and the search for innovation?" "Who is responsible for assessing higher education?" "When and how should assessment be done?" and many others.

To the review team, a number of things are clear. First, a sound quality system is critical for the further evolution of higher education in Kazakhstan. Second, relying on the government to do everything in this area is not a productive strategy in the long run. Third, there is an urgent need to shift further and faster from a bureaucratic control based, centrally managed, and punitive quality measurement culture, towards a more proactive quality assurance culture. This will require a well planned effort to decentralise quality assurance, devolve roles and responsibilities from central government to the institutions, and involve all relevant stakeholders, including employers.

Some basic concepts

Before analysing Kazakhstan's approach to higher education quality assurance and improvement, it is important to clarify concepts and terminology. This chapter will use the definitions in Table 5.1.

Table 5.1 **Definitions of terms commonly used in higher education quality**

Term	Definition
Accreditation	The process by which an accreditation body evaluates the quality of a higher education institution as a whole (institutional accreditation) or a specific higher education programme (programme accreditation) in order to formally recognise it as having met certain predetermined minimum criteria or standards. The result of this process is usually the awarding of a status (a yes/no decision) of recognition, and sometimes of a license to operate for a specific period of time. The process can imply initial and periodic self-study and evaluation by external peers.
Assessment	The process of systematic gathering, quantifying and using information to judge the effectiveness and adequacy of a higher education institution or a programme. It implies evaluation of core activities. It is a necessary basis for a formal accreditation decision. See also Quality assessment (below).
Audit	The process of reviewing a programme or institution, that is primarily focused on the accountability of the latter, evaluating/determining if the stated aims and objectives (in terms of curriculum, staff, infrastructure, etc.) are met.

Benchmark(ing)	**Benchmark** is a standard, a reference point, or a criterion against which the quality of something can be measured, judged, and evaluated, and against which outcomes of a specified activity can be measured. In contrast, **benchmarking** is defined as a standardised method for collecting and reporting data in a way that enables relevant comparisons among different organisations or programs.
Certification	The process by which an agency or an association acknowledges the achievement of established quality standards and usually grants certain privileges to the target individual (student or teacher).
Evaluation	A systematic and critical analysis leading to judgements and/or recommendations regarding the quality of a higher education institution or a programme.
Quality assessment	Indicates the actual process of external evaluation (reviewing, measuring, and judging) of the quality of higher education institutions and programmes. It consists of those techniques, mechanisms, and activities that are carried out by an external body in order to evaluate the quality of the higher education processes, practices, programmes, and services.
Quality assurance	An ongoing process of assessing, guaranteeing, maintaining and improving the quality of a higher education system, institution or a programme.
Quality control	Measurement of quality of an institution or a programme referring to a set of operational activities and techniques.
Quality culture	A set of shared, accepted and integrated patterns of quality to be found in the management systems of institutions.

Source: Adapted by the authors from Vlăsceanu, L., L. Grünberg and D. Pârlea (2004), *Quality Assurance and Accreditation: A Glossary of Basic Terms and Definitions*, UNESCO, Bucharest.

Quality assurance, therefore, is an all-embracing term ideally focusing both on improvement (*i.e.* achieving higher quality) and on accountability. However, there is usually some tension between improvement and accountability: different educational systems strike different balances between these goals. Quality assurance[6] covers all of the following:

- regulations (legal frameworks, governance, responsibilities and accountabilities, etc.);
- educational process (admissions, registration or enrolment, support for learning, assessment, etc.);
- curriculum design and content (validation and approval frameworks, levels and standards, etc.);

6 Although there are different typologies commonly used to analyze the quality assurance framework in higher education, the one presented by Middlehurst (2001), p. 8, seems more relevant for the purposes of the review in Kazakhstan.

- learning experience (consumer protection, student experience, complaints and appeals, etc.);
- outcomes (qualifications, certificates, transcripts and Diploma Supplement; security, transferability, recognition/currency and value, etc.).

Against this background, this chapter will analyse the important steps taken in Kazakhstan in recent years, assess the current situation and make recommendations for further progress.

Recent developments

Figure 5.2 contrasts regulated and deregulated approaches to quality assurance. Kazakhstan's higher education sector remained highly regulated for some years after the collapse of the Soviet Union. More recently, it has started on the path to deregulation, but even today there remain a substantial number of control mechanisms and highly bureaucratic procedures that HEIs must follow. The review team saw a similar pattern reproduced inside HEIs, even in those established recently.

Table 5.2 **Transition of approaches to higher education quality**

Regulation	**Deregulation**
Detailed previous steering	Control afterwards
Control, but not necessarily quality	Quality assurance
Government directed	Market directed
Fading of institutional responsibilities	Institutional differentiation and competition
Constancy	Flexibility

Source: Adapted by the authors from Segers, M. and F. Dochy (1996), "Quality Assurance in Higher Education: Theoretical Considerations and Empirical Evidence", *Studies in Educational Evaluation*, Vol. 22, No. 2, pp. 115-137.

The OECD review team takes the view that higher education in Kazakhstan will contribute better to achieving the competitiveness goals of the country if a stronger, more decentralised quality assurance system is now developed. The system needs to progress from quality control to quality assessment, assurance and improvement. HEIs need to be given more freedom and autonomy, in exchange for greater accountability. As experience in other competitive countries shows, this change may be expected to bring real benefits, including allowing institutions to conduct

better research, improve teaching and learning and improve their preparation of graduates to meet labour market needs.

The assessment framework

The national government of Kazakhstan, specifically the Ministry of Education and Science (MOES), is the principal authority in higher education in the country. Though a progressive deregulation process has been taking place in recent years, also discussed in Chapter 6, the government has retained a comprehensive central control system aimed at ensuring order and direction and avoiding corruption in the higher education system. This seemed particularly important after liberalisation of the higher education sector and admission of private universities resulted in a proliferation of HEIs.

The process of deregulation of higher education is planned to culminate in the year 2010 with the full development of a National System for Education Quality Evaluation (NSEQE). It is fair to recognise that many changes that often take many years in other countries have been achieved in a mere 15 years in Kazakhstan. In this time the quality assurance system has evolved through the stages illustrated in Table 5.3, first towards a quality control and regulatory stage and, more recently, towards a quality assurance, though still highly regulated, stage.

The evolution of the system has resulted in the creation of a variety of public institutions and mechanisms for higher education quality control and assessment, all of which depend in one way or another on the Ministry of Education and Science (see Table 5.4).

Thus the government of Kazakhstan has responded to the need to address issues of higher education quality by developing a comprehensive legal framework and by establishing a large number of government agencies and government based committees, which are intended to work effectively together to monitor and improve the quality of the higher education system. However, in practice, the result is an excessively regulated system in which quality bodies have overlapping roles and place undue burdens on HEIs.

Table 5.3 **Development of government policy related to higher education quality**

Stages	Government priorities	Goals	Means for governmental control over HEIs
1991 - 1994	Development of legal and regulatory framework of higher education	- Governmental standards; - Multi-layered higher education system	Attestation of HEIs
1995 - 1998	Higher education modernisation and development of non-public sector	- Concept of governmental policy in the field of education; - Standards of higher education; - Classifier of Professions	- Licensing - Attestation of HEIs - Compliance with licensing requirements - Final control
1999 - 2000	Decentralisation and expansion of academic freedom in higher education	- Decentralisation of HEI management systems - Educational grants and loans	- Licensing - Compliance with licensing requirements - Attestation of HEIs - Final control
2001 - 2004	Higher education strategic development	- State Program of Education Development in the Republic of Kazakhstan 2005-10 - National System of Education Quality Evaluation (NSEQE)	- Licensing - Compliance with licensing requirements - Attestation of specialisations in HEIs - Interim control and final control
2005 - present	Comprehensive system of education quality evaluation	- Development of educational evaluation and quality assurance institutions	- Licensing - Compliance with licensing requirements - Attestation of specialisations in HEIs - Interim control and final control - Accreditation

Source: Adapted from Narenova, M., *et al.* (2006), "Doklad po natsionalnoy politike v obllasti vysshego obrazovaniya Respubliki Kazakhstan" (National Policy in the field of Higher Education in the Republic of Kazakhstan), unpublished background report and presentation prepared for the review team.

Table 5.4 **Government entities involved in higher education quality**

Organisation/Government Entity	Functions
Ministry of Education and Science (MOES)	Main authority in charge of higher education. Setting up general policy and strategy
Committee for Supervision and Attestation in Education and Science (CSAES)	Supervision and attestation of all HEIs in the country, including the awarding or removal of licences to operate
National Centre for Educational Quality Assessment (NCEQA)	Monitoring of the higher education system
National Accreditation Centre (NAC)	Institutional accreditation
Centre for Certification, Quality Management and Consulting (CCQMC)	Fostering the certification of support and administrative processes
National Centre of State Standards for Education and Tests (NCSSES)	Developing standards and tests, administering tests

Source: Adapted from Narenova, M., *et al.* (2006), "Doklad po natsionalnoy politike v obllasti vysshego obrazovaniya Respubliki Kazakhstan" (National Policy in the field of Higher Education in the Republic of Kazakhstan), unpublished background report and presentation prepared for the review team.

Quality in the educational process

Since the central government through its various agencies sets the higher education agenda and enforces quality control mechanisms, higher education institutions are compelled to respond to requirements and comply with government imposed regulations. They are not motivated therefore to develop their own quality targets – especially with regard to educational processes – and to assess their own strengths and weaknesses and improve themselves.

Examples of processes still highly regulated by the government are admissions and enrolment. As explained in more detail in Chapter 3, all students planning to enter higher education must complete a Unified National Test (UNT) or equivalent Comprehensive Test. The government decides what the pass score is and institutions accept potential students based on their scores. A second element of government involvement is in the awarding of government grants or vouchers for the payment of tuition fees to selected students (see Chapters 3 and 4), and by the so-called "State Orders", which define the priority areas in which the government will increase or decrease admissions quotas each year.

Institutions have been involved in the certification of specific administrative processes using ISO-9000 Standards, especially in the areas of admissions, student services and general management. The government has created an entity – the Centre for Certification, Quality Management and Consulting (CCQCM) – which is intended to help institutions certify processes based on the ISO standard. In some institutions the team visited, ISO certification was seen as the badge of a good university. While acquiring ISO-9000 certification is a useful exercise, it has a limited impact from an educational quality viewpoint. The ISO certification process – originally designed for non-educational organisations – only assures processes, not outcomes, and does not seek to assess academic quality or standards, but rather to assess customers' quality requirements, and applicable regulatory requirements, while aiming to enhance customer satisfaction.

Quality in the curriculum

Curriculum design and delivery is also highly regulated by government. With the participation of experts, the national government insists that detailed "State Standards" are followed for core courses in all academic programmes offered by both public and private higher education institutions. These "Standards" do not – as readers from Western countries might assume – define output standards or objectives: rather, they define in detail what is to be taught (the curriculum content). Generally, around 50 % of the total academic workload in all academic programmes is mandated by the national government through the State Standards.

Periodic reviews are conducted in both public and private institutions to make sure that teachers are complying with the State Standards, as part of the attestation process. An institution not able to demonstrate satisfaction of this quality control requirement risks losing its licence. Though this could be said to be an area in which the government has been gradually reducing its role, because previously 90% of course content was centrally regulated, this apparent relaxation stems from other decisions to change the format of courses, reducing the core proportion and raising the optional proportion to 50% as the system moved to fewer, broader specialisms and a credit based approach. HEIs' theoretical freedom to decide what may be offered in the remaining 50% is severely constrained in practice. The range of options is limited by the set core content, by the rules on hours to be spent teaching it, and by the need to ensure students perform well in centrally-set tests taken at the end of their 2nd and final years – tests designed to assess whether the state standard syllabus has been fully covered.

The State Standards are devised by whichever university wins the contract to draw them up. This is unsatisfactory from the quality assurance viewpoint. The process for awarding contracts is based on fair contracting principles, but the criteria do not specifically ensure that the winning university takes into account the latest subject or pedagogical developments or employers' needs when preparing the Standard of international best practice,. Indeed, one university visited by the OECD review team believed it had been penalised in the contracting process for trying to introduce international standards. Once a university has been awarded the contract, there must be a temptation to write up the Standard in a way that allows them to teach the subject as it has always been taught; there is no incentive for that university to innovate or to modernise the Standard. Other universities are not permitted to vary the core elements of the Standard to deliver what they believe their students or employers need; if they do, they will be penalised in the attestation process. Their only flexibility to respond is through the optional elements of courses; and this is limited, as explained above.

This system of controlling higher education curricula through mandatory State Standards imposes constraints on academic freedom and decision making that would be unthinkable to HEIs in the world's most competitive countries. The review team believes that it introduces a strong dimension of rigidity that has an adverse impact on course quality and relevance. This is particularly unfortunate in subject areas where Kazakh higher education has failed to keep pace with world standards. In economics, social studies, humanities and information technology (IT), for example, the review team observed standards and curriculum materials in need of serious modernisation.

Quality of the learning experience

Limited information was provided to the members of the OECD team on mechanisms established to ensure that the students' educational experience is satisfactory. Checks on this do not seem to be part of national quality control processes. This could be because university students are not considered as consumers of an educational service – even at private universities and even if fee-paying. This contrasts with the treatment of students in other countries, almost all of which give their students more public funding support (see Chapter 4). As a first step, some institutions have asked students to submit evaluations of their teachers, and encouraged them to report misconduct or requests for payments; and some allow students to choose their professor. Students' views on courses and facilities are also conveyed through students' associations.

Discussions with students at universities visited did not reveal much discontent with the teaching, except about the high number of classroom hours. This links with teachers' high workload, a question returned to below. However, it must be borne in mind that the team met selected students, who rarely had experience of other systems to judge by. And students quite often raised issues about their poor learning environment, equipment and access to textbooks, the Internet and international opportunities. Though the OECD team had no statistical data on the quality of facilities and support, anecdotal evidence and the team's observations bore out the students' complaints.

Quality of the educational outcomes

The quality of outcomes is measured only through the mechanisms designed to ensure compliance with State Standards and curricula, discussed above. There is a newly established Comprehensive National Mid-Term Test that all second year higher education students must complete. Only those who pass this test are allowed to remain enrolled. Those who are able to stay take a final test at the end of their courses. The official degree is awarded by the national government. This is intended to show that all degrees have equal value. It does, however, inhibit transparency and accountability. Unofficially, some institutions delay giving approval for the government to award the degree until the graduate demonstrates that he/she has a job, so as to maximise their percentage of graduates going into employment (which is checked as part of the attestation and licensing processes).

Quality of teaching and teachers

This area too is highly regulated by the centre. As well as regulating what shall be taught through the State Standards mentioned above, the MOES regulates teachers' salaries: private HEIs can improve on them, but not public HEIs. Members of the Kazakhstan Parliament told the team that, despite increasing more than 60% in the last two years, teachers' salaries were still far too low and that the country would never resolve problems in higher education quality until higher education teachers' salaries became more competitive. The National Education Report (Damitov, *et al.*, 2006), published in 2006 by the National Centre for Educational Quality Assessment (NCEQA), points out that in OECD countries in 2002 the average teacher's salary was 1.37 times GDP per capita, whereas in Kazakhstan in 2004 it was 0.58 times GDP per capita. The same report recommends raising salaries and allowing pay to vary according to performance, workload and specialty deficit.

The MOES also regulates teachers' hours. As already mentioned, these are typically 800 to 900 hours a year, an immensely high teaching load by international standards. Chapter 8 explains that this – like low teacher salaries – is part of the Soviet legacy, but it causes many problems; for example, higher education teachers have very little time for research or for keeping up with developments in their subject. The problems are compounded by many teachers working for more than one HEI, to try to make up for the low salaries, as mentioned in Chapter 1. The team heard of professors who are still teaching on the basis of lecture notes prepared many years ago, arguing that they had never had time or opportunities to update them. Interestingly, even some students the review team met thought that their teachers were overworked and underpaid, a situation likely to lead to corruption and illegitimate requests for payments to help students enter universities, pass exams and get credits.

Teachers' workload also constrains time for in-service training and continuing professional development. The National Education Report (Damitov, *et al.*, 2006) states that improving the professional level and competence of teachers is the main prerequisite for education quality improvement. MOES policy is that higher education teachers should undertake refresher and upgrading training at least every five years, but public funding is not always available to support this re-training, and teachers cannot easily pay for it themselves out of their low salaries.

Major findings

The government of Kazakhstan has devoted considerable effort to ensuring the quality of higher education institutions and their educational offerings and has made some moves towards a decentralised quality assurance approach. However, important challenges still need to be addressed. From an international perspective, and based on the observations made during the OECD Review Visit and the analysis of the documentation provided, there are a series of issues that deserve further attention of policy makers and institutional leaders.

Too many simultaneous developments

With the perception of the urgent need to modernise the higher education system, the government has implemented a wide variety of actions in a short of period of time, ranging from licensing to testing and including accreditation, certification of processes, external assessment, etc. However, the proliferation of actions, the plethora of agencies and

committees and the frequent changes in the related regulations and processes are confusing and overburdening higher education stakeholders.

Representatives from institutions visited told the OECD team that there are too many reforms that are difficult to digest and which lack consistency. Government officials attributed this to the pace of reform, noting that Kazakhstan is a country in transition and that lessons are still being learnt about what approach may be the most effective.

Introducing new models without changing underpinning structures

Both government and institutions have been experimenting with new approaches to quality assurance in higher education, some resulting from recommendations by international experts extrapolating models that have proved effective in other countries. However, superimposing new models on an unreconstructed, conservative system and structures may not produce the expected outcomes. In particular, there is a problem if HEIs respond to the new approach in exactly the same way as they responded to the old, *i.e.* do what they must to demonstrate compliance. One specific example is the request of the government that institutions be more proactive in self-assessing their academic programmes. The response from some institutions and even government agencies has been to impose onerous controls to show how serious they are about self-assessment. Teachers are being required to complete daily reports recording the specific activities conducted and the academic contents of that day's lesson. Academic staff at some institutions complained of having to follow a highly bureaucratic reporting process that leads to limited time for the proper preparation of courses.

The review team concludes that Kazakhstan's quality assurance system will not realise its potential as a productive tool for improvement until HEIs move away from this compliance mentality and embrace institutional self-improvement with enthusiasm, commitment and a belief that they own the process. HEIs are unlikely to make this move while so many central control mechanisms remain in place. There may have been sound historical reasons for introducing these controls – the review team takes no position on this – but it is important now to relax them, and to provide real incentives to HEIs to take responsibility for improving their own quality and standards.

Maintaining independence in overall quality evaluation

An important achievement in Kazakhstan has been the recent creation of the National Centre for Educational Quality Assessment (NCEQA), which has as its purpose to conduct the overall assessment of education at all levels, from pre-school through higher education. The NCEQA has already

produced the first annual *National Report on the Status and Development of Education*, also known as the National Education Report, quoted above and in previous chapters. Ultimately, the NCEQA intends to conduct research and analysis, providing information that can be used as a basis for decision making processes at the government and institutional levels.

The NCEQA is headed by a former deputy minister, which gives it considerable authority. However, it is a subordinated structure within the Ministry of Education and Science (MOES) and may face greater political risks and pressures in the future. It is important, to maintain the trust of Kazakhstan society, that it be given independence in the technical and scientific aspects of its research.

An example of a proactive approach in assessing the quality of education is the NCEQA's analysis of the performance of students in the Unified National Test for entrance to universities. Until now, the test has been used mainly as a "filter" for admission to higher education institutions, and as a "diverter" of less qualified students to other educational options. However, the Centre's analysis enables the results of every secondary school's pupils in every subject to be compared, thus providing individual schools with valuable feedback on how well they prepare students for higher education entry, compared to other schools in similar or different circumstances. It would be helpful to explore the possibility of similar comparative analyses of HEIs' performance.

The role of testing in quality assurance

The standard national second year test and final test are regarded by the government of Kazakhstan as important components in the quality assurance of the higher education system.

It is difficult to find a direct equivalent in other countries to Kazakhstan's second year test. OECD review team members were made aware that students and academic staff had reservations about its technical validity, content and fairness. Its future will be called into question in any case, when Kazakhstan reduces Bachelor's degrees from four years to three and introduces a 12th year of schooling, because it is not clear that a test after just one year would be worthwhile.

There are other, more general reasons to question whether standard national second year and final tests are the right way to assure and improve higher education quality. First, all tests can push institutions and students to become more concerned about the test than about their wider learning. Then they will tend to concentrate on measurable things and leave limited room for less quantitative, more qualitative and reflective learning components of

the educational process, including those requiring critical thinking. This "narrowing" effect may be justified at lower learning levels where mastery of the basics needs to be assured; but at higher levels, where wider learning and innovative thinking are so important, it is a problem. Secondly, because a test should test what has been taught, a standard national test is only appropriate where there are standard national curricula and courses. As indicated in the discussion of State Standards above, the review team regards it as undesirable to impose a rigid single model on higher learning. This discourages and may altogether prevent institutions from developing their own curricula to respond to labour market needs or students' wishes and interests, because they become "trapped" by the expected outcomes of the test.

The review team suggests that Kazakhstan should move towards the establishment of quality assurance arrangements that make it safe to allow HEIs to develop and set their own final tests (and interim tests if necessary), to test mastery of their own curricula. Then the standard national tests can be dispensed with.

Accreditation: a tool for government control or institutional self-improvement?

In a setting like Kazakhstan's, where many government agencies are working to achieve positive results in a short period of time and institutions are trying to react to what are sometimes mixed signals, an important sign of success and accomplishment is to show that an institution has met quality criteria established by independent outside agencies. While a licence to operate proves that minimum quality criteria have been met, institutions have been looking for additional ways to show their quality. Some of them claim to be of good quality simply because they have been able to obtain an ISO-9000 certification of a particular administrative process, while others even consider themselves to be of good quality just because they belong to some international higher education associations, or have been affiliated with a collaborative international project. None of these provide comprehensive assurance of the overall quality of an HEI, its teaching and learning.

A recent addition to the panoply of quality measurement in Kazakhstan is the concept of accreditation. This moves away from government centred quality control and monitoring, to support and give HEIs credit for learning achievement, sound internal processes and controls, honest self-evaluation and, in general, a culture of self-improvement. The National Accreditation Centre (NAC) has been set up and has: developed an accreditation methodology based on best European and US practice in higher education

quality assurance; consulted HEIs on its criteria and processes and revised the initial specification accordingly; is starting to train experts to conduct accreditations; and will shortly be ready to start institutional accreditation. This will be a positive and supportive process. Institutions will receive advice on how to evaluate their own strengths and weaknesses and improve their own arrangements. They will be visited and given tailored advice on what progress they need to make to pass accreditation. They will take the necessary steps, and formally seek accreditation when ready.

The review team were informed that HEIs had warmly welcomed this new approach. Considerable overlaps and duplication between the MOES attestation process and NAC accreditation were identified, making it clear that HEIs do not see a need for both. As HEIs confirmed during the team's visits programme, the accreditation process is much more conducive to quality improvement than attestation. It is designed to achieve improvement (rather than compliance and control) and to do so by building up HEIs' capacity to assure quality for themselves. The review team is persuaded that the next stage in Kazakhstan's reforms should be to adopt accreditation as the main means of promoting and achieving good quality higher education, offered by self-motivated HEIs taking responsibility for their own academic destinies. The team sees no need to continue attestation once the NAC has established the capacity to advise and accredit all HEIs. There will be a continued need, however, to ensure that minimum standards are met by institutions working towards accreditation. This could be achieved by maintaining the licensing procedure and requiring non-accredited HEIs to apply periodically for re-licensing. To distinguish clearly between accreditation and other more control-based MOES quality mechanisms, it would be helpful to make the NAC an independent agency.

Recommendations

- The government of Kazakhstan should take steps to conduct a comprehensive full review of its quality assurance overall system, and the role that each of the agencies play in it, in order to make it more useful, and less duplicative.
- The government of Kazakhstan should consider decentralising existing quality control mechanisms and moving towards a stakeholder based quality assurance culture.
- These steps should include phasing out the classifier of higher education courses and State Standards, and allowing individual HEIs to decide on the courses they will offer, and the content and curricula for those courses, provided they have proved their

competence to take those decisions by passing institutional accreditation.

- International experience suggests that, instead of the MOES or government agencies controlling quality, it is more effective to entrust quality assurance to an independent accrediting agency or agencies with the direct involvement of professional associations and/or employers.
- The government's role should become the strategic management and quality control of those independent agencies.
- The National Accreditation Centre (NAC) should become an independent agency responsible for accrediting HEIs who have met the criteria (institutional accreditation).
- To minimise overlap and burdens on institutions, attestation should be phased out as unnecessary, once institutional accreditation is established, and the remaining quality assurance mechanisms reviewed to rectify real and perceived duplication and conflicting roles and goals.
- A sound institutional accountability and self-evaluation culture and process should be developed at the level of higher education institutions, including a new set of tools for institutional self-assessment that focus on outcomes and competencies achieved, rather than inputs and processes. The government can provide incentive measures to encourage institutions.
- It is also important to further develop an independent capacity to gather, analyse and report data on the performance of higher education in Kazakhstan; to encourage the use of this information in the development of public policy and institutional decision making processes; and to report on the performance of HEIs and the higher education system through the media, the Internet and other means widely available to the public. It is highly desirable to entrust these tasks to an independent, non-governmentally controlled agency.
- The review of remaining quality control mechanisms recommended above should look critically at whether standard national tests continue to be needed at the end of the second year (which will, after introduction of the 12th year of schooling, become the first year) and at the end of degree courses. National tests would be inconsistent with allowing accredited HEIs to decide course content and syllabuses for themselves, and could be inconsistent with the course outcomes sought by international or regional employers.

- Quality control mechanisms should be established and/or enforced to ensure that programmes offered by international providers of higher education based in the country are not lower quality than those offered by Kazakhstan HEIs.
- To improve teaching and learning quality, steps should be taken to ensure that academic staff have fewer mandatory hours, are not overburdened with administrative compliance checking reports, have more time to prepare course materials and update their knowledge, and have more funded opportunities for professional development.

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Chapter 6: Governance and Management

This chapter reviews the evolution of current arrangements for the governance and management of the higher education system in Kazakhstan. It stresses the importance of giving higher education institutions more autonomy, in order to make the system competitive in a global market economy. Examples of international best practice are quoted.

The chapter proposes governance reforms that will increase autonomy and devolve decision making from central government to institutions.

Introduction

During the pre-independence period, the governance and management system of Kazakh higher education institutions (HEIs) was designed to serve a planned economy and authoritarian political system. The transition from the planned economy to a market economy after independence entailed the following changes in the operating environment of HEIs:

- If a planned economy required from HEIs the management capacity to achieve the goals set for them from the outside, a market economy required the capacity to set their own goals and to achieve them.

- If a planned economy required a culture of compliance from HEIs, a market economy required initiatives from them.

- If, in a planned economy, HEIs received resources to deliver the goals set by the government, in a market economy HEIs were also responsible for mobilising the resources to meet the goals set by themselves.

- If, in an authoritarian political regime, HEIs have been tightly controlled by administrative authorities, an open society requires more autonomy,

accompanied by accountability to all stakeholders including students, teachers and employers.

The governance environment counts

To be able to operate and compete in a market economy, HEIs need to enjoy sufficient autonomy to be able to take initiatives. Autonomy of HEIs from the government, and autonomy of departments and individual academic staff within the HEIs, are critical for fostering a culture of initiative-taking from the institutional level down to the individual academic staff level. Autonomy improves the ability of institutions to adapt their programs and courses in response to labour market needs, which in turns increases their contribution to national competitiveness. More autonomy means that HEIs can better respond to student needs, and thereby improve the teaching and learning experience of students, which should translate into increased student achievement. Universities are best able to take responsibility for their future when they function in an autonomous manner. They are best placed to identify their own problems and come up with their own solutions.

In Box 6.1 is one example (from India) of how, as a result of being given autonomy, universities have been able to develop into excellent – indeed world class – institutions.

Box 6.1 The Indian institutes of technology

The post independence Indian Government, aspiring to develop India as a major world power, wished to develop world class universities capable of helping to improve the competitiveness of Indian economy. Two options were considered. The first was to invest in the existing universities, which, though autonomous to some extent, were subject to heavy interference from the state; the second was to establish autonomous HEIs modelled on the best universities in the world. Many people were sceptical about the second option, thinking that the concept of autonomy would not thrive in the Indian environment plagued with corruption, nepotism and favouritism. Nevertheless, India, under the visionary leadership of Prime Minister Nehru, chose that second option. Indian Institutes of Technology (IITs) were established in Kharagpur, New Delhi, Bombay, Kanpur and Madras in the 1950s and 1960s as autonomous Institutes of National Importance through a separate act of the Parliament. The Act gave them full autonomy to govern through bylaws approved by their own IIT Council. This provision severely limited the ability of the state to interfere with the management of IITs, as the government has to amend the Act to do so. The IITs also received technical assistance from the best universities of Germany, the United Kingdom, the United States and the USSR.

While institutional autonomy helped the IITs to inch towards the status of world class

universities, the older universities continued to stagnate. The Indian Congress passed a resolution in 2005, acknowledging the contribution of IIT graduates to the Indian economy. The contribution of autonomous IITs and other HEIs in helping India emerge as a major economy is well recognised. In the recent Times Higher Education Supplement list of the top 200 universities in the world (2006), the IITs were collectively ranked at number 57.

To meet the goal of making the economy of Kazakhstan globally competitive, Kazakhstan HEIs need to become competitive with the HEIs of developed economies; and this requires reform of their governance arrangements.

Governance of higher education in Kazakhstan and comparator countries

This section tries to assess the adequacy of governance of the higher education system in Kazakhstan by comparing it with the systems of developed economies, while recognising that the operating environment for higher education systems differs from country to country. Kazakhstan, like many developed countries, has made substantial progress in introducing market forces into higher education. Private HEIs are allowed and encouraged to operate, generally on equal terms with the public HEIs, though must finance their own land and buildings, unlike the latter, which are eligible for grants from the ministry. HEIs in both sectors mainly gain access to government recurrent funding by competing for and attracting grant bearing students, who currently account for 16% of enrolment. All HEIs, therefore, must be competitive to survive. This makes it crucial that they have the autonomy to compete successfully. The analysis in this chapter focuses on public HEIs because they currently have less autonomy and management flexibility than the private HEIs.

Moves towards increased autonomy for HEIs must keep in mind the need to guard against the risk of corruption. The visits and interviews conducted by the review team showed clearly that corruption is still a concern in higher education in Kazakhstan. Some of the government quality controls described in Chapter 5 were introduced specifically to reduce or avoid the risk of corruption.

In many countries, the higher education funding system includes mechanisms to guard against universities taking decisions that may increase government liabilities. However, this is unnecessary in Kazakhstan's system, where the government ties recurrent funding of universities to their number of grant receiving students and accepts no financial liability for HEI

decisions. In fact, it can be noted that the government has been readier to concede autonomy in financial than in academic areas.

The autonomy of public HEIs in Kazakhstan is compared with that of the public HEIs of some developed economies in Table 6.1.

Table 6.1 **Extent of university autonomy in selected OECD countries and Kazakhstan**

Category	Countries							
	Netherlands	Austria	Ireland	UK	Denmark	Sweden	Finland	Kazakhstan
Own buildings and equipment	X	X	X	X				
Borrow funds	X			X	X			
Spend budgets to achieve objectives	X	X	X	X	X	X	X	X
Set academic structure and courses		X	X	X		X	X	
Employ and dismiss staff	X	X	X	X	X	X	X	X
Set salaries	X	X		X		X	X	
Decide size of student enrolment	X		X		X			

Note: X means that the university has the power to perform this function autonomously.

Source: These responses come from a survey undertaken in 2003 by members of the OECD's Programme on Institutional Management in Higher Education and reported in OECD (2003), *Education Policy Analysis 2003*, OECD, Paris. The information for Kazakhstan is based on interviews conducted during the OECD/World Bank team visit in September 2006 and the authors' study of the Education Law of Kazakhstan.

Legislative autonomy

In Kazakhstan, HEI bylaws are approved by the MOES on recommendation by HEIs. In most countries this is the practice, though there are countries where HEIs have authority to approve bylaws on its own. For example, IITs in India and all universities in Canada and Nepal have the authority to approve bylaws on their own. Providing authority for approving bylaws can significantly enhance the self esteem of HEIs, which is important for nurturing excellence. The experiences of countries that have decentralised this function indicate that HEIs can handle this responsibility in an accountable manner.

Academic autonomy

Universities are the bastions of knowledge. Traditionally, deciding what to teach, how to teach, whom to teach and to whom to award a degree has been the prerogative of universities. Knowing what to teach means knowing the frontiers of the subject area. Similarly, knowing how to teach implies the teacher's mastery of the subject, and knowing whom to teach assumes capacity to assess students' ability to master a given programme. Deciding who has merited a degree requires knowledge of the objectives, components and standards of those programmes, and knowledge of the needs of society and employers for skills in a given area. Universities and their teachers cannot achieve academic excellence without proving themselves competent in all these areas.

In Kazakhstan, many important decisions that affect the academic operation of HEIs are made by the Ministry of Education and Science.

- Student entry standards are set by the MOES, when it sets the UNT pass score. In many countries, including the United States, the United Kingdom, Canada and India, HEIs set their own entry standards. However, for the reasons already spelled out in Chapter 3's discussion on corruption, full autonomy in these areas is not recommended for Kazakh universities.

- The authority to introduce new courses, adopt own curricula, set examinations and graduation standards lies with universities in the Netherlands and Canada, United States and the United Kingdom. In Kazakhstan this authority is vested in the MOES.

- Decisions to start post graduate programmes are taken by HEIs in the Netherlands and Canada. In other countries where the Ministry of Education takes the decision, the justification is often that the ministry bears the cost. In Kazakhstan, post graduate students are financed by the MOES and by other sponsors, including students themselves. As the responsibility for sustaining the programmes lies with HEIs, they should have the decision making authority.

- HEIs in Kazakhstan do not fully control the size of their enrolment, which is determined by norms set through the licensing process. Here again, this is often done by HEIs themselves in developed countries, such as the Netherlands, Denmark and Ireland.

Administrative autonomy

Control over the governing board makes universities self governing organisations. Danish, Canadian and United Kingdom universities have

control over the composition of their governing bodies. In Kazakhstan the composition of the Scientific Council – the governing board – of HEIs is prescribed by bylaws approved by the government.

In Kazakhstan, in the case of public HEIs, rectors are appointed by the government. However, the appointment of the head of the HEI by the governing or academic council significantly enhances the accountability of the university's leader to the university itself. In most comparator countries, this is what happens; though it may be done in various ways, as Table 6.2 illustrates.

Table 6.2 **Appointment of leaders of universities in selected EU countries**

	Process for election or appointment	Government approval required	Typically appointed for how many years?	Renewable position?
	Countries where leaders are usually ELECTED by:			
Lithuania	Senate (academic staff)	No	4-5	Yes, for one term
Finland	Academic staff & heads of separate institutes	No	5	Yes
France	Academic Council	No	5	No
Czech Republic	Academic Senate (academic staff and student representatives	No	3	Yes (for 2 consecutive periods, with possibility of later re-election)
Hungary	Senate (academic staff and students)	Yes	4	Yes, for one term
Latvia	Constitutional Meeting (academic staff 60%, other staff 20% & students 20%)	Yes	5	Yes, for one term
Slovakia	Academic Senate	No	4	Yes, for one term
Slovenia	All higher education faculty, faculty assistant, researchers employed by the university and students 20% of all votes	No	4	Yes
	Countries where leaders are usually APPOINTED by:			
Ireland	Governing Body (approximately 50% external)	No	10	No
Netherlands	Supervisory Board: 5 external members appointed by the minister	No	4	Yes
Sweden	Government, on recommendation of mainly external Governing Board which first consults students & employers	Yes	6	Yes, for two periods of three years

UK	Governing Body, of which majority are external members *Countries where reforms have been implemented in 2003:*	No	7	Yes
Austria	Formerly elected by University Assembly (75% staff, 25% students) From 2003 appointed by University Council, made up of external members, from a shortlist of 3 candidates nominated by Senate.	No	4	Yes
Denmark	Formerly elected by academic staff (50%), other staff (25%) & students (25%) From July 2003, appointed by Board with majority of external members	No	4	Yes

Source: for EU8, interviews/questionnaires; for EU15 countries: OECD (2003), *Education Policy Analysis 2003*, OECD, Paris, Table 3.4.

When it comes to the appointment and dismissal of the academic staff, Kazakhstan is on a par with the comparator countries. The academic staff are recruited on three-year contracts. The authority for appointment and termination of the academic staff, together with the lack of academic tenure, gives great flexibility in terms of faculty management.

Of the comparator OECD countries, only Canadian universities have the authority to determine pay and terms of employment for the academic staff. In Kazakhstan, although the terms of service and the pay are regulated by the government, public HEIs have significant authority to adjust salaries by topping up from non-budget resources, which constitute the lion's share of HEI budgets.

Financial autonomy

In most industrial countries, universities manage their own budgets, whereas public HEIs in Kazakhstan do not. This is a serious limitation because it constrains their capacity to use resources effectively and imposes high transaction costs on budgetary management. Paradoxically, HEIs in Kazakhstan do generate the bulk of their resources on their own, whereas, in many Western European countries, public universities are still heavily dependent on government budgets.

Kazakh public HEIs have the authority to fix tuition fees for self financed students, *i.e.* most students, which is more authority than in some comparator countries.

Dutch, United Kingdom and Canadian HEIs have authority to engage in income generation ventures on their own. The income generation of Kazakh HEIs is regulated, though they enjoy a relatively high degree of flexibility.

Dutch, United Kingdom and Canadian HEIs own all their land, buildings and other physical assets. Kazakh HEIs own only physical assets acquired from non-budget incomes; though, compared to private HEIs, they enjoy the considerable financial advantage of having their buildings provided free by the state. Similarly, HEIs in these comparator countries can borrow from the market, while Kazakh HEIs cannot.

Management of the higher education system

Giving Kazakh HEIs greater autonomy would have implications for the management of the higher education system as a whole. The current location of key system management functions is illustrated in Table 6.3. This section considers how the location of these functions should be adjusted, so that HEIs can exercise the greater autonomy we recommend. This would involve transforming the function of the ministry from directly managing HEIs to providing overseeing, monitoring and facilitation. However, it would leave the ministry with the roles of policy analysis and formulation and resource allocation.

Table 6.3 **Current locations of key system management functions**

Key Functions	Ministry/ Government	Specialised Independent Agency	Council of Rectors/ Presidents/ Vice Chancellors	Associations and lobby bodies (*e.g.* Unions)
Setting vision, goals and setting policies	X			
Strategic planning	X			
Agreeing size and shape of system	X			
Licensing new institutions	X			
Accreditation	X			
Researching policies and objectives	X	X		
Allocating resources	X			
Managing financial assistance to students		X		
Monitoring	X			
Collecting statistics	X			
Student selection	X			
Setting curriculum standards and intermediate quality control	X			

Source: Authors, based on interviews and background documents.

Moving towards greater autonomy

There is an increasing realisation in OECD countries that, as tertiary education systems become more complex and diversified, governments can be more successful by steering from a distance rather than exercising a direct supervisory role. In these countries, higher education governance takes the form of a regulatory framework that encourages and facilitates, rather than controls.

Based on the analysis conducted earlier, the review team suggests allowing Kazakh HEIs greater autonomy in a number of governance areas, already discussed, and also in two important aspects of management. First, HEIs should be allowed to offer competitive remuneration packages, so that they can attract and retain top quality professors and researchers and recruit leaders who can be at the forefront of the process of making Kazakh HEIs into modern institutions of research and learning. In those subject areas where Kazakh higher education is least competitive internationally, HEIs

may well need to look outside the country for top professors and researchers, and pay them international rates. But HEIs individually and collectively should also be encouraged to develop their own academic leaders, and give them incentives to rise to the top. Secondly, the administrative and financial rules and controls to which public universities are required to conform in their daily management should be simplified and relaxed, to give them more room to deploy their resources in the most effective way – though at the same time, external audit, accountability and reporting systems should be reinforced, to guard against corruption and misappropriation.

The recent higher education reform in Denmark provides a rich illustration of the types of governance and management changes that Kazakhstan could consider as a model (see Box 6.2).

Box 6.2 Higher Education Reform in Denmark: The University Act of 2003

Through reforms in four key areas – institutional autonomy, institutional leadership, quality assurance and internationalisation – Denmark is in the process of transforming its university system into an independent sector contributing to broad national success by answering more effectively to the evolving labour market that it serves.

Institutional autonomy: Increased independence for Denmark's universities. The University Act of 2003 sought to increase the deregulation of state rules and control of the educational content:

- As of 2003, all universities in Denmark are considered independent subsidiaries of the Ministry of Science, Technology, and Innovation.
- Funds are distributed based on established rates for research and on per student enrolments and completion, to establish more objective criteria for funding. Indirect costs are also subsidised, based on established rates.
- Institutions are allowed to use their complete subsidies as they deem necessary, may also seek outside sources of funding, to complement the state contributions and may establish profit-making activities.
- Performance Contracts, first introduced in 1999, serve as an agreement between the government and individual institutions regarding how that institution will seek to maximise its individual strengths. These contracts allow institutions to set their own goals and determine the results that would establish whether those goals have been met, focusing on institutional excellence and results, instead of political pandering. Institutions work to their strengths, as defined by themselves, and seek successes at points where they are most competitive.

Institutional leadership. Leadership at every level is balanced both within and outside:

- Governance of the institution is primarily in the purview of an external majority university board, whose members are elected, not appointed, and include representatives from both within and outside the university, including academic and administrative staff and students.
- Each university's rector serves at the will of the board.
- Each campus also has at least one academy council, representing the academic interests of the campus staff.
- Deans are hired and supervised by the rector and in turn hire and supervise department heads.
- Deans also establish study boards, composed of academic staff and students, to ensure the fair and proper "organisation, realisation, and development of educational and teaching activities…".

Source: Universities Act (2003), *www.videnskabsministeriet.dk*.

With greater autonomy goes greater accountability for the use of public funds. One way of ensuring accountability is through the quality assurance system. Chapter 5 discussed current MOES quality control mechanisms and suggested that the focus should shift to **accreditation**, to be conducted by an independent National Accreditation Centre. The other way is through adequate reporting on financial matters, as mentioned in Chapter 4 on Financing and again above.

Implementing autonomy reform

A summary of governance reforms proposed is presented in Table 6.4. Legal amendment would be required to implement virtually all these reforms. Reform will only be required for public HEIs in some areas, where private HEIs already have autonomy. However an important distinction is drawn between HEIs that have earned accreditation, and those that have not. Gaining accreditation is a sign that the institution is well managed and competent to take responsibility for academic, financial and other decisions.

Table 6.4 **Proposals for devolving autonomy to HEIs**

Function	Accredited HEIs		Others	
	Critical	Desirable	Critical	Desirable
Legislative				
Adoption of bylaws[1]	X			
Academic				
Student entry standards[2]		X		
Selection of students[2]		X		
Introduction of new courses/elimination of old courses	X			
Decision to teach courses at graduate level	X			
Examination/graduation standards	X			
Administrative				
Membership and control of governing board/council	X		X	
Appointment/dismissal of rector	X		X	
Academic pay and conditions[3]	X		X	
Financial				
Management of university budget	X		X	
Approval of income generation ventures	X		X	
Own buildings and equipment		X		X
Able to borrow funds		X		X

Notes:

1. Bylaws mean the statute or the constitution of a HEI. The proposal is to delegate authority of approving of bylaws to the governing council of HEI, within the framework of national legislation and applicable rules.

2. HEIs would still need to use results of national entry tests rather than setting their own, and to respect national regulations designed to ensure equity and access, as discussed in Chapter 2. However, higher pass marks or additional conditions could be set if thought necessary for particular courses.

3. Subject to national minima.

Source: Authors, based on interviews and background documents.

If more powers and responsibilities are to rest on the governing bodies of individual HEIs, these must be fit for the purpose. At present, the governing body of a public HEI in Kazakhstan is called the Scientific Council. Its membership is confined to students, professors and administrative staff of the HEI. To enhance social accountability, the review team suggests that the government could require universities to establish separate governing boards, whose membership would include external representatives – of employers, the community, and possibly government.

This would bring Kazakhstan into line with universities world wide, which normally have a governing council or board vested with the duty to take policy and major management decisions, as well as an academic council responsible for taking academic decisions. In many comparator countries the external representatives are in the majority on the governing council. The team suggests that Kazakhstan should also adopt this approach.

The team also believes that the government of Kazakhstan would do well to follow other countries' examples (see Table 6.2) and empower governing boards to appoint university rectors. This would be in line with the general international recognition that rectors need management competence and experience, as well as academic credibility. The thrust of recent structural reforms in OECD countries, for example Denmark, is that the board and the rector are gaining extra powers and are being urged by governments to become more managerial in running their universities. Where the board makes the appointment, it must then hold the rector accountable for performance in managing the university. The methods used to do this tend to follow management good practice by establishing performance targets and measuring success against them.

In Kazakhstan, labour laws and norms for salaries funded from the treasury regulate salaries. The review team's proposal is to allow both accredited and other HEIs to decide how much to pay their own staff.

In Kazakhstan, a public HEI's budget must be approved by the MOES and the HEI also needs to obtain approval for movement of funds between budget lines. The team's proposal is to allow all HEIs to formulate and approve their own budgets and subsequently to move funds between budget lines. This implies that public HEIs should cease to be regarded as budget units of the government. To encourage autonomous HEIs to give value for the fee and grant income they receive from students and public authorities, and to reinforce accountability to stakeholders, the MOES could develop more and more transparent performance based budget allocation mechanisms, as recommended in Chapter 4.

Consultation and capacity building

Implementation problems can be minimised by broad consultation and explanation of the reform agenda, to expand the constituency for the reform. It is recommended that a consultation campaign be designed and organised prior to implementation.

Appointment of the rector, formation of the governing council, management of assets and borrowing of funds will be new functions for public HEIs, and some capacity building development will be required to

ensure that HEIs execute these functions efficiently and accountably. Independent external audit should be required and relied upon as a deterrent to corruption. Studies of systems in countries where HEIs already have some or all of the above freedoms, such as the United States, the United Kingdom and Canada, could be worthwhile before implementation details are finalised. It might also be helpful for key personnel to undertake short courses in higher education management at universities in these countries and then to organise similar courses in Kazakhstan with the help of resource people from overseas institutions, to multiply the effect.

Capacity building should also include designing a framework for ensuring accountability of HEIs and training and development of the staff concerned, again with the help of overseas experts.

Findings

- The decentralisation of academic, legislative and administrative autonomy to HEIs has lagged behind the decentralisation in funding, which is bound to handicap the higher education system in fully using the potential gains from impressive funding reforms.
- Public HEIs have to compete with the private HEIs in the market for students, and consequently resources. Public HEIs can be disadvantaged because they have less administrative and financial autonomy compared to private HEIs. This may lead to poor returns from the investment that the government had made in public HEIs.
- The system is relying heavily on control to ensure the quality of education. While this is a useful tool for ensuring that graduates from weak institutions reach a minimum standard, it can not help strong institutions to excel.
- Moreover, the involvement of the MOES in both quality control and management compromises the execution of the first function.
- Accreditation by an independent agency, as recommended in Chapter 5, will combine quality assurance with university self-improvement. Gaining accreditation will be a sign that a HEI is competent to exercise full autonomy in academic matters, and can be trusted to do so.
- There is a case for giving all HEIs financial and administrative autonomy.

Recommendations

- All HEIs that gain accreditation should be entitled to academic autonomy, and allowed to make their own decisions on introducing new undergraduate and postgraduate courses, on course content, on examinations, graduation standards and certain changes to entry standards.
- To improve HEI governance and bring Kazakhstan in line with best practice in developed countries, all HEIs should be required to set up governing boards with majority external representation, in addition to their scientific or academic councils; and the governing boards should appoint rectors.
- All HEIs should have the right to determine academic pay and conditions, manage their own budgets and introduce income-generating ventures.
- Accreditation of HEIs should be independent of the MOES.
- The MOES' role in the management of HEIs, and controls over them, should be reduced to the minimum possible level.

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Chapter 7: Internationalisation

Internationalisation has been defined as a process that prepares a community for successful participation in an increasingly interdependent world. This chapter examines what internationalisation means for higher education in Kazakhstan. It recognises recent developments in the area, including the important step of adopting the Bologna process.

The review team outline several outstanding issues with regard to internationalisation and puts forward recommendations for improvement and development in these areas.

Introduction

Higher education in Kazakhstan faces opportunities and challenges, as the country grows in importance in the international arena. Over the last decade, as discussed in previous chapters, substantial efforts have been made at national level to modernise the higher education system and improve its quality and relevance. At the international level, there is an increased recognition of the importance of internationalising higher education as a fundamental part of educational policy that can improve the quality and relevance of education. It is evident that if Kazakhstan wants to become a more competitive nation, higher education should become more internationally minded.

Internationalisation of higher education is more than just the exchange of students and signing of collaborative agreements. It involves embedding the international dimension in all aspects of teaching and research, at both national policy and institutional levels. Internationalisation has been defined as "a process that prepares a community for successful participation in an increasingly interdependent world. The process should infuse all facets of a post-secondary education system and include an active involvement of government agencies and the employers sector, aimed at fostering global

understanding and developing skills for effective living in a diverse and competitive world."[7]

For Kazakhstan, this means, among other things, effectively equipping graduates with the wide range of skills, knowledge and competences required in the global economy; conducting internationally competitive research; using international experience and international providers to help increase the quality of higher education in Kazakhstan; and attracting international students and professors. Efforts in this area cannot be seen as peripheral. Faced with the challenges and opportunities presented by globalisation, an internationalisation strategy should be a central pillar of the overall strategic planning for higher education in the country.

Against this background, this chapter analyses the important steps taken by Kazakhstan in recent years, and the further distance to be travelled.

Internationalisation of higher education in Kazakhstan: relevant developments

Chapter 1 describes Kazakhstan's aim to join the top 50 most competitive nations, and shows in Table 1.2 the country's current rankings in the World Economic Forum's Global Competitive Index (GCI). Although rankings should be considered with caution, the GCI constitutes a consistent benchmark against which the government and society of Kazakhstan can measure the performance of the country at the international level. The government's declared intention to become a more competitive nation presents significant challenges, but also provides a unique opportunity that higher education institutions (HEIs) can and must seize, by further improving and internationalising themselves.

A major structural reform: adopting the Bologna framework in higher education

A major step towards the internationalisation of higher education in Kazakhstan has been the country's decision to adopt a major structural reform, commonly known as "the Bologna Process", taking place in the European Union. Identified officially as the most important and wide ranging reform of higher education in Europe since the immediate aftermath

7 In contrast with traditional definitions of internationalisation of higher education, which are confined to the mere institutional scope, the definition used by A. Francis (1993), is a comprehensive one which considers internationalisation in the framework of a regional policy.

of 1968, the Bologna Process aims at establishing a European Higher Education Area (EHEA) by 2010, within which staff and students can move with ease and enjoy fair recognition of their qualifications. Kazakhstan is adopting the process despite the fact that the country is not eligible to be a member of the EHEA, since it is not a signatory of the European Cultural Convention. Nevertheless, Kazakhstan has been commended for its pioneering efforts to reform its higher education system along the general lines of the Bologna Process.[8]

Since this decision, higher education institutions in the country have been developing plans that will lead to a transition from the current types and levels of academic programmes to the three levels established under the Bologna framework: Bachelor's degrees, Master's degrees and PhDs, which currently take four years, two years and four to five years respectively. If planned and implemented well, this reform provides the opportunity not only to make the degrees offered in the country comparable with European degrees, but also to develop the higher education curriculum to include relevant international dimensions. However, the government agencies and HEIs involved need to be clear that adopting the Bologna framework goes beyond adopting the three level system. It also implies major changes in the way academic programmes are organised and offered. Among other things, programmes should be made more student centred; they should be designed around desired outcomes rather than specified inputs such as study hours; and flexibility should be allowed in the way courses are structured, provided outcomes are achieved.

Preparing students abroad: The Presidential Bolashak Scholarship Programme

Due to the recognition that there are too few specialists with "advanced Western" education, in 1994 the government of Kazakhstan established a scholarship programme through which talented young people are fully supported to study abroad in leading institutions, not only at the graduate level, but also at the undergraduate level. Since its inception, the Presidential Bolashak Scholarship Programme has benefited more than 2 500 individuals who study or have studied in more than 20 countries. According to official data, nearly 800 of them, upon their return, have held leading government

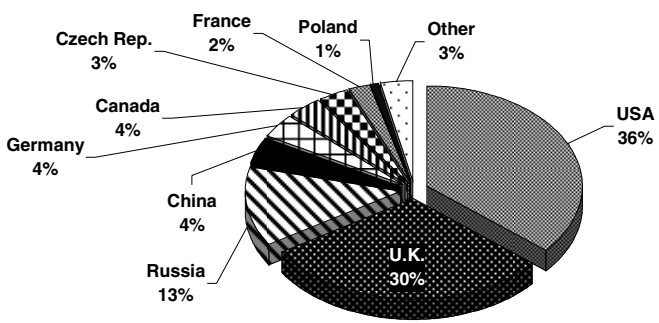
8 A more detailed analysis can be found in: Bologna Follow-Up Group (2005), "Applications for Participation in the Bologna Process", BFUG4 9, *www.bologna-bergen2005.no/B/BFUG_Meetings/050301-02Mondorf/BFUG4_9.PDF*, p. 3.

positions and managerial jobs in national companies, represented the country in international organisations, or developed domestic businesses.

The Programme is administered by a government owned company named Centre for International Programs (CIP), which was created for the purpose of managing the scholarships. Historically it provided an annual average of 100 scholarships to study abroad, although beginning in 2005 it increased to a record number of 1 697. Most of the funded students are enrolled in universities in the United States (614), the United Kingdom (507), and Russia (219) – as shown in Figure 7.1. No information was provided to the OECD review team on levels of study.

Changes in the regulations for the awarding of scholarships made by a government decree of 26 April 2006 are intended to make the selection process clearer and more transparent and focused (Centre for International Programs, 2006a). The new regulations also include mechanisms to mitigate the "brain drain" effect common to this kind of initiative, such as including the parents of the future international student as collateral guarantors of payments in case the student does not return to the country. At the same time, the CIP has dramatically expanded a partnership initiative with 84 universities and organisations in 24 countries. However, the links are not clear between the goals of the programme, national and regional priorities, and the outcomes of the programme. Outcomes need to be seen not only in terms of numbers of students and graduates, but, even more importantly, in terms of their subsequent contribution to their country's innovation-led growth and prosperity.

Figure 7.1 **Recipient countries of Bolashak students – 2005**



Source: Centre for International Programs (2006c), *Report on Presidential Bolashak Scholarships Awarded in 2005*, Centre for International Programs, Astana.

Despite Kazakhstan's intention to build human capacity in sciences and technology, most of the supported students are enrolled in social and managerial sciences, although important emphasis is placed on preparing people for the power and oil and gas businesses (see Table 7.1). In contrast, limited support exists for other sectors also identified by the government as central priorities for the scientific and technological development of the country, such as Biology and Biotechnology (25 students representing only 1.47 % of total funded students), or Motor Industry and Mechanical Engineering (15 students representing only 0.89 %).

Table 7.1 **Top ten fields of study of Bolashak students, 2005**

#	Field	Number of students	Percentage of total students (1 697)
1	State Management and State Policy	347	20.5
2	Computer Sciences and Computer Facilities	307	18.1
3	Economic Sciences	165	9.7
4	Innovative Management and Technologies	161	9.5
5	Power and Oil and Gas	158	9.3
6	Medical Sciences	107	6.3
7	Social and Humanitarian Studies	39	2.3
8	Astronomy and Space	37	2.2
9	Architecture and Construction	36	2.1
10	Law and International Law	35	2.0

Source: Centre for International Programs (2006c), *Report on Presidential Bolashak Scholarships Awarded in 2005*, Centre for International Progams, Astana.

A more focused effort in fields of study strategically important to the government is reflected in the new regulations mentioned earlier. The 2006 Call for Applications for the Bolashak Programme has identified the following 13 priority majors: public administration, education, health care, space sciences, industrial and innovation development, rural territories development, housing construction, e-government, clusters (metallurgy, transport logistics, textile industry, food industry, tourism, oil and gas engineering, and construction materials), science, public safety, social and cultural development, and civil aviation (Centre for International Programs, 2006b). Challenges remain in better identifying appropriate host institutions for students, attracting past recipients of the scholarship back to the country and using their talent more effectively. There are also opportunities to

optimise limited resources, by using the leverage power of the CIS more efficiently with host institutions and countries.

Liberalisation of higher education: space for international providers

Kazakhstan is one of the leading countries in the world in the opening of its higher education system to international providers. More than a decade ago, new legislation allowed for the creation of private higher education institutions. This major change in educational policy also opened the door to international providers of higher education. Currently, there are 5 branches of foreign universities in the country.

Theoretically, by opening the country to international universities, the higher education system is internationalised to a certain extent. However, full internationalisation makes alternative academic offerings available to students by including joint degree programmes, dual degree programmes, greater emphasis in the teaching/learning of other languages and exposing students to international academic staff.

Exploring innovative approaches: recent initiatives

Various initiatives are being implemented in the country to further accelerate the process of internationalisation of higher education. This includes the planned construction of modern facilities for a Scientific and Educational Complex in which the "New University" will be established. [9] For Kazakhstan, this facility has been envisaged as the global university of the future, engaging in joint operations with universities from abroad. Another initiative is a special incentive funding programme offered on a pilot basis by MOES to two public universities in the country to support the hosting of top level professors and researchers from abroad, working as visiting scholars in their research centres.

Outstanding issues

Commendable efforts to internationalise higher education have been made in Kazakhstan, but important challenges remain. Based on the

[9] The creation of this institution was mentioned by the Minister of Education during the meeting of the OECD Review Visit. Later a document entitled "Concept of Scientific Educational Complex 'New University' in Astana" was provided to the OECD team for review.

observations made during the OECD review visit and the analysis of the documentation provided, the following issues deserve the further attention of policy makers and institutional leaders.

Limited and uneven internationalisation of higher education institutions

Current approaches follow a very traditional pattern which assumes that internationalisation is equal to the mere signing of memoranda of understanding (MOU) or agreements for collaboration with institutions abroad. It is well known in the international education field that the signing of agreements frequently does not go beyond the ceremonial and public relations effect, and that the impact of these agreements on the main functions of participating universities tends to be marginal. In general, institutional leaders in HEIs worldwide talk proudly about the many collaborative agreements they have signed. However, when someone asks about the concrete outcomes the response is usually vague and ambiguous. Kazakhstan is no exception.

There is limited evidence of the internationalisation of the curriculum, the offering of studies in an internationally relevant second language, the availability of accessible opportunities for international exposure of academic staff, or the availability of accessible opportunities for international exchange students.

Some institutions have developed mission statements and even strategic plans in which reference is made to the importance of global issues and their role in preparing students for a competitive world. Also, some institutions have developed links with employers with the specific aim of producing internationally competitive graduates. However, more and wider concrete action is needed.

A major advance is that all the HEIs visited by the OECD team have an office in charge of international co-operation. However, it was evident that those entities are under-funded and understaffed. In addition, at the national level there is no group, association or committee composed of the heads of university international co-operation offices where its members could share ideas and experiences and foster mutual professional development.

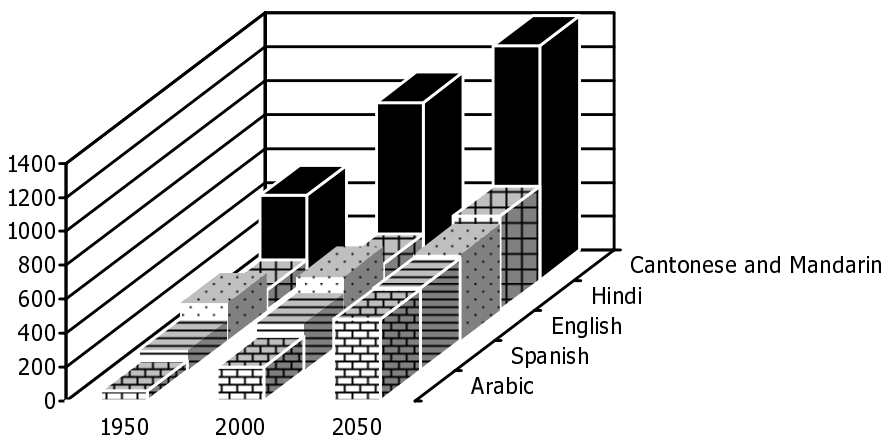
All this said, there are some successful cases of internationalisation in Kazakhstan higher education that show what is possible.

Second and third language competencies

Command of an internationally useful second and third language has become an important skill for success in the current global environment (Marmolejo, 2005). One of the ten recommendations that UNESCO recently issued on building successful knowledge societies is to make linguistic diversity a priority. "Knowledge societies must be based on a double multilingualism… and it is advisable to encourage bilingualism and, insofar as possible, trilingualism as early as primary school".[10]

English has become a *lingua franca* in the economic, business and academic environments in today's increasingly interconnected world. In 2001 it was estimated that 70% of scientific publications in circulation were written in English, 17% in French, 3% in German, 1.37% in Spanish, and the rest in other languages (Hamel, 2002). English also dominates as a language of communication in the international business environment. Other languages of growing importance in the world are Cantonese and Mandarin, Spanish, Arab and Hindi (see Figure 7.2).

Figure 7.2 **Main languages spoken in the world, 1950-2050 (millions)**



Source: Graddol, D. (1997), *The Future of English?,* British Council, London.

10 This is the sixth of ten recommendations made by UNESCO to governments, non-governmental organisations, and the private sector and civil society, to address the ethical dimension of knowledge societies (UNESCO, 2005a), p. 186.

Kazakhstan has the great advantage, in comparison with many other countries, of being a Kazakh/Russian bilingual country. Higher education institutions show none of the resistance to embracing multi-lingualism that often exists elsewhere: teaching and learning in two or more languages were "business as usual".

The language of instruction most used in HEIs in the country in 2005-06 was Russian, with 56.5% of students, followed by Kazakh, with 42.6%, English, with 0.9%, and others, mainly Uzbek, with 0.1% (see Table 7.2). Over the five years shown, in which student numbers grew substantially, English-taught students increased by 249%, although the numbers are still small, while Kazakh-taught students increased by 149% and Russian-taught students by only 44%.

Table 7.2 **Distribution of higher education students by language of instruction (percentages)**

	2000-01 (% of students)	2001-02 (% of students)	2002-03 (% of students)	2003-04 (% of students)	2004-05 (% of students)	2005-06 (% of students)	2000/01-2005/06 (% increase in student numbers)
Kazakh	**30.1**	**31.5**	**36.2**	**38.6**	**40.0**	**42.6**	**149**
Russian	69.3	67.7	62.9	60.5	58.8	56.5	**44**
English	0.5	0.5	0.5	0.6	0.8	0.9	**249**
Other	0.2	0.3	0.3	0.3	0.5	0.1	**-47**

Source: Calculated with data from: Agency of the Republic of Kazakhstan on Statistics (2006), "Obrazovaniye v Respublike Kazakhstan" (Education in the Republic of Kazakhstan), Statistical bulletin, Agency of the Republic of Kazakhstan on Statistics, Almaty, p. 83.

Nevertheless, if the country wants to become more competitive on the world stage and intends to equip its citizens with the skills to compete in the global arena, more serious consideration should be given to providing as many students as possible with full command of English. This is obviously not an activity to be undertaken only at the higher education level; it should begin much earlier. It requires a co-ordinated effort among the various levels of the education system to prepare and train teachers and develop the required supporting infrastructure. Seen from a long term perspective, a comprehensive, multi-level strategy on this matter would facilitate the internationalisation of the curriculum, student and academic staff exchanges, and research at the higher education level. This should not be seen as diminishing the importance of local languages, but as complementing them. Ensuring full command of a *lingua franca* at lower levels of the education system would allow other important regional languages, such as Mandarin,

Kazakh, and Russian, to be offered as options at the higher education level. Other countries that have struggled with a similar dilemma and succeeded include Denmark, Finland, Malaysia and Sweden.

Lack of an international dimension in the academic curriculum

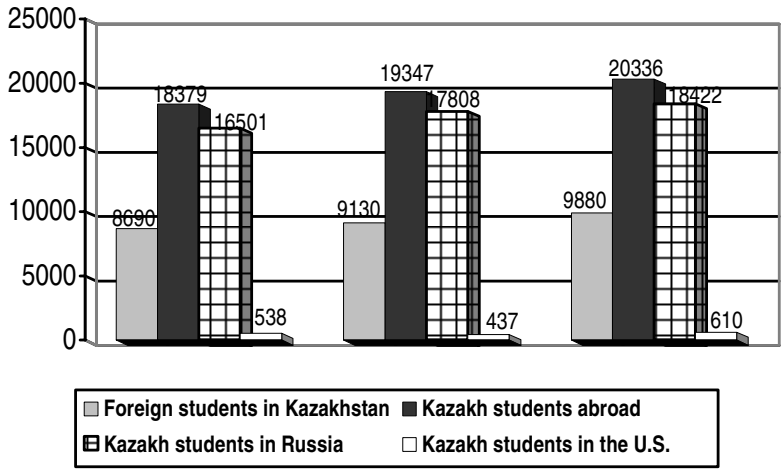
The curriculum is the most powerful tool HEIs can use to prepare globally minded and internationally competitive graduates (Cogan, 1998; Gacel-Avila, 2003). This is especially true and more crucial when, despite the commendable efforts of governments, institutions and individuals, still only a very small proportion of students enjoy the experience of studying abroad. Some academic programmes have included an international dimension in their curriculum, due to the nature of the academic field or the specific characteristics of a particular institution, but this is not the case in general.

In discussions with administrators, academic staff and students at institutions included in the OECD review visit, the importance of an international dimension to the teaching and learning process and to course content was widely recognised. It was less clear that anything is being done about it. A reason commonly cited by university administrators and teachers is that the curriculum is very rigid, detailed and inflexible, reinforced by excessive government regulation. It was also said that academic staff are not equipped to teach courses with an international dimension, and have very limited opportunities to acquire such a dimension through training.

Student and academic staff international mobility

The Bolashak Scholarship Programme, plus specific student and academic exchange arrangements established at the institutional level, are the main mechanisms to foster international mobility for students and academic staff in Kazakhstan. In recent years, more opportunities for international mobility have been made available to students and academic staff. In the case of students, from 2003 to 2005, the number of Kazakhstan nationals studying abroad has increased by 10.6%. At the same time, the number of foreign students in HEIs in Kazakhstan has grown by 13.2% (see Figure 7.3). Over the same period, the number of individuals supported by the Bolashak Scholarship Programme to study abroad increased dramatically from fewer than 50 to almost 1 700.

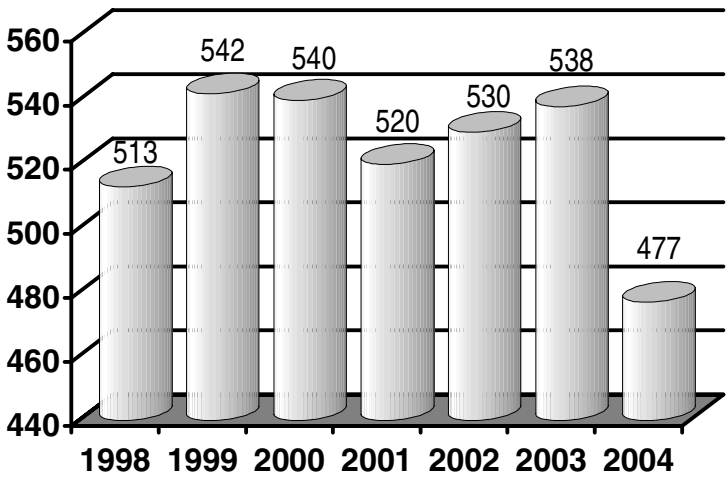
Figure 7.3 **Dynamics of the import and export of students in Kazakhstan, 2003-2005 (number of students)**



Source: Calculated with data provided by the Agency of the Republic of Kazakhstan on Statistics, the Ministry of Education and Science and, in the case of United States data, IIE (2003, 2004, 2005), *Open Doors*, Institute of International Education, New York.

However the overall numbers are very low if we consider that only around 2.7% of the total higher education enrolment in the country is able to study abroad. And those who do so tend to go to a narrow range of countries. Most opt to go to Russia. By contrast, those countries that attract the most foreign students have limited numbers of nationals from Kazakhstan. In the case of the United States – the largest worldwide recipient of international students with 22% of the total (OECD, 2006a) – the number of students from Kazakhstan has been relatively stable in recent years, almost stagnant, representing an average of only 0.08% of all international students in the United States (see Figure 7.4).

Figure 7.4 **Students from Kazakhstan enrolled in United States higher education institutions**



Source: IIE (1999, 2001, 2003, 2005 and 2006), *Open Doors*, Institute of International Education, New York.

In comparison with other countries in Central/South Asia (excluding India), Kazakhstan has a higher number of students in the US than Afghanistan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan, among others, but ranks below Pakistan, Mongolia, Nepal, Bangladesh and Sri Lanka (see Table 7.3).

As regards the capacity of the country to receive international students, Figure 7.5 shows that Kazakhstan's educational institutions enrolled 9 880 foreign students in 2005, representing 1.3% of the total student body. It is assumed that most of the students are from neighbouring countries, although no statistics were made available to the OECD team.

Table 7.3 **Students from Central/South Asia enrolled in United States higher education institutions**

Fall term, 2003-2006

Country	2003-04	2004-05	2005-06	Percentage of total 2005-06	Variation 2003-04 to 2005-06 (%)
Afghanistan	109	155	175	0.90	60.6
Bangladesh	3 198	2 758	2 581	13.31	(19.3)
Bhutan	63	70	77	0.40	22.2
Kazakhstan	**538**	**477**	**626**	**3.23**	**16.4**
Kyrgyzstan	179	185	189	0.97	5.6
Mongolia	711	769	927	4.78	30.4
Nepal	4 384	4 861	6 061	31.26	38.3
Pakistan	7 325	6 296	5 759	29.70	(21.4)
Maldives	15	24	26	0.13	73.3
Sri Lanka	1 964	1 992	2 157	11.12	9.8
Tajikistan	117	158	185	0.95	58.1
Turkmenistan	98	103	154	0.79	57.1
Uzbekistan	412	416	472	2.43	14.6
Total	**19 113**	**18 264**	**19 389**	**100.00**	**1.4**

Source: IIE (2005 and 2006), *Open Doors*, Institute of International Education, New York.

Attracting international students is recognised as making a useful contribution to the internationalisation of local students and professors. In addition, institutions in some countries have found this strategy to be a source of additional revenue, since they often charge higher fees to international students. Using the case of the US as a reference again – due to the limited information available from other countries – it is notable that only two students in the years 1999 to 2003 and ten students in the year 2003-04 chose Kazakhstan for their study abroad (IIE, 1999-2004).

Some factors, identified by the OECD, underlying students' choice of a country in which to study include: language of instruction, the impact of tuition fees and cost of living in foreign destinations, the academic reputation of particular institutions or programmes, the flexibility of programmes with respect to counting time spent abroad towards degree requirements, the limitations of tertiary education provision in the home country, restrictive university admission policies at home, geographical, commercial or historical links between countries, future job opportunities,

cultural aspirations, government policies to facilitate credit transfer between home and host institutions, transparency and flexibility of courses and degree requirements, and last, but not least, migratory regulations (OECD, 2006a). A more detailed review of these factors is advisable if Kazakhstan's government and institutions consider that attracting more international students would be useful to the higher education system's internationalisation strategy or its future viability when domestic student numbers decline.

As regards the international mobility of academic staff, no specific data was made available to the OECD team. However, academic staff at institutions visited mentioned that opportunities for international mobility are few, and concentrated in some fields of study and research. It was also said that the dissemination of information about opportunities for academic staff mobility could be improved, and that mechanisms used to assign these opportunities could be more transparent. An important limitation identified by the academic staff related to poor language skills. Also, as described in Chapter 8, there is no evidence that special measures are taken to encourage the return of researchers who have emigrated.

There is, however, some evidence that an increasing, but still small number of scholars from Kazakhstan spend time at peer institutions abroad. Again using information from the United States as a case in point, from 1998-2006, the number of scholars from Kazakhstan in that country grew by almost 87%. The 86 scholars from Kazakhstan in the United States during the 2005/06 academic year represented 5.87% of the scholars from the South/Central Asia region (excluding India), and 0.089% of the 96 981 international scholars in the United States (see Table 7.4). There may be a much larger number of Kazakhstan's scholars in Russia and other countries, although no information is available.

Table 7.4 **Scholars from Central/South Asia hosted by United States higher education institutions**

Fall term – 1998, 1999, 2003 and 2004

Country	Number of scholars				Percentage in relation to the region			
	1999 /2000	2003-04	2004-05	2005-06	1999 /2000	2003-04	2004-05	2005-06
Afghanistan	6	3	8	26	0.58	0.23	0.60	1.78
Bangladesh	199	240	253	293	19.38	18.26	19.09	20.01
Bhutan	1	4	6	5	0.10	0.30	0.45	0.34
Kazakhstan	**80**	**61**	**62**	**86**	**7.79**	**4.64**	**4.68**	**5.87**
Kyrgyzstan	35	49	33	38	3.41	3.73	2.49	2.60
Maldives	0	1	0	5	0.00	0.08	0.00	0.34
Mongolia	37	37	48	53	3.60	2.82	3.62	3.62
Nepal	68	105	118	128	6.62	7.99	8.91	8.74
Pakistan	386	551	494	529	37.59	41.93	37.28	36.13
Sri Lanka	110	155	185	195	10.71	11.80	13.96	13.32
Tajikistan	24	20	16	19	2.34	1.52	1.21	1.30
Turkmenistan	25	8	6	9	2.43	0.61	0.45	0.61
Uzbekistan	56	80	96	78	5.45	6.09	7.25	5.33
Total [1]	**1 027**	**1 314**	**1 325**	**1 464**	**100**	**100**	**100**	**100**
Total World	**74 571**	**82 905**	**89 634**	**96 981**				

Note:

1. South & Central Asia (excluding India).

Source: Calculated by the authors with data from: IIE (2000 and 2006), *Open Doors*, Institute of International Education, New York.

The research agenda and internationalisation

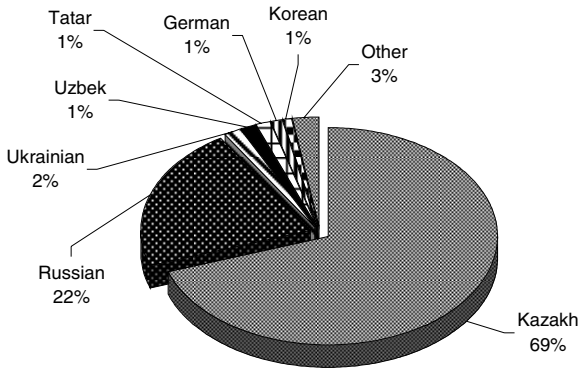
An important dimension the government of Kazakhstan is considering as part of the process of national capacity building has to do with the further development of its research infrastructure, as discussed in Chapter 8. In today's world, competitive research needs to be planned and implemented from an international standpoint. This includes the development of international joint/collaborative research projects. Mechanisms to develop linkages with peers are important, as are access to internationally

competitive funding sources, preparation of researchers abroad and attracting them back to the country. As discussed in previous sections, Kazakh scholars have limited working relationships with peers abroad and further improvement is needed in the mechanisms for funding talented individuals for graduate study abroad under the Bolashak Scholarship Programme.

Internationalisation of higher education in a multicultural society

Another key ingredient for the success of university graduates in a globally competitive labour market is related to the acquired capacity of the individual to interact and work in multicultural environments. Kazakhstan has important advantages in this, being a multicultural society. Enrolment in higher education institutions reflects this characteristic (see Figure 7.5).

Figure 7.5 **National ethnic composition of higher education students in Kazakhstan**



Source: Narenova, M., *et al.* (2006), "Doklad po natsionalnoy politike v obllasti vysshego obrazovaniya Respubliki Kazakhstan" (National Policy in the field of Higher Education in the Republic of Kazakhstan), unpublished background report and presentation prepared for the review team.

However, multicultural awareness should not be taken for granted. Concrete efforts to incorporate a multicultural perspective into the teaching/learning process would make graduates of HEIs in Kazakhstan more able to succeed in an international environment. This requires, among other elements, appropriate training for academic staff (Teekens, 2003).

Support infrastructure and institutional capacity for internationalisation

As previously indicated in this chapter, individual HEIs in Kazakhstan are making efforts to manage their international co-operation agenda and activities better. It is common to observe the existence of an office directly responsible for international co-operation in institutional organisation charts. However, in the institutions visited by the OECD team it was evident that those offices are under-funded and understaffed. This is a critical limitation, considering that the field of international higher education has become highly specialised and sophisticated. In addition, at the national level there is no group, association or committee composed of the heads of university international co-operation offices in which its members could share ideas and experiences and foster mutual professional development. A clearing house through which institutions, academic staff and students could learn about opportunities for international engagement does not appear to exist.

Last, but not least, the presence of Kazakhstan's HEIs and related government agencies in international fora and international higher education organisations is very limited. As an example, in a search conducted by the authors of this report it was found that none of the HEIs in Kazakhstan belong to key organisations in the field, such as the European Association for International Education (EAIE), the International Higher Education Association (NAFSA) or the Asia-Pacific Association for International Education. At the institutional leadership level, only seven universities from Kazakhstan belong to the International Association of Universities (IAU) and none belong to the OECD Programme on Institutional Management in Higher Education (IMHE). A more active and well co-ordinated presence of Kazakhstan's higher education institutions in selected key organisations and educational fairs would contribute substantially to improving the country's positioning and capacity for international partnerships and to increasing student and academic staff exchanges.

Recommendations

Curriculum

- Higher education institutions in Kazakhstan need to place more emphasis on preparing globally minded, locally responsible and internationally competitive students. The development of competences required by the knowledge economy should be given high priority by the government, the higher education institutions and by employers, as also discussed in Chapter 2.

- Academic staff in HEIs should have training and incentives to encourage them to find out about international developments in their subjects and introduce international elements into their curricula.
- Participation in the Bologna process should be seen as a unique opportunity to learn about the content of other countries' higher education courses, and adapt courses in Kazakhstan HEIs to include international elements.
- In addition, when curricula are updated, the opportunity should be taken to include an international dimension when appropriate.

Second language

- Kazakhstan needs to raise English language competence among its higher education graduates. This should be done in addition to the current programmes aimed at providing language competencies in Russian and Kazakh. An internationally functional command of a second and third language should be emphasised, beginning in earlier levels of education so that only reinforcement is necessary at the higher education level.

Student and academic staff mobility

- Kazakhstan could benefit by dramatically increasing the international mobility of students and academic staff. More outgoing and incoming students and professors could be highly instrumental in the internationalisation of HEIs, and would, in the long run, contribute to the improved competitiveness of the country.
- It is advisable to increase funding for student and academic staff mobility, including the development of cost-recovery mechanisms and the implementation of partnerships with employers and interested international organisations.
- It is highly recommended that the number of international students and academic staff in higher education institutions in Kazakhstan be increased. This requires more international dissemination of information about HEIs' capabilities and offerings, as well as more reciprocal agreements, more matching funding programmes, more initiatives to support the hosting of top level professors and researchers from abroad and further development of HEIs' administrative capacity to support international activity.

The Bolashak Programme

- It is recommended that the Bolashak Scholarship Programme be enlarged and improved to maximise the efficiency of use of these limited resources, further linking the programme to national and institutional priorities, and developing a mechanism to attract and provide appropriate opportunities to returning graduates.
- As regards the scope of support, more emphasis could be placed on graduate programmes than on undergraduate programmes. This could include expanding its coverage by including support for academic staff and researchers for joint research and visiting scholars overseas.

Research

- It is recommended that the government research agenda takes account of the international dimension when setting national priorities; and that the government develops and funds mechanisms for internationally based collaborative research.

Building capacity

- It is critical that Kazakhstan builds capacity at the system level to better address the need for internationalisation of higher education. The following specific steps are suggested:
  - A national clearinghouse for international higher education opportunities should be established in order to foster the exchange and dissemination of information and to help institutions identify and develop international partnerships targeting the country's strategic priorities in terms of areas of knowledge and regions. The current Centre for International Programs (CIP) could be well positioned to take on this role.
  - A national association or inter-institutional committee composed of international education officers should be created to share experiences, engage in professional development activities and further the development of international education as a profession.
  - Kazakhstan higher education should be more actively and visibly represented in relevant international fora, international higher education organisations and at international higher education fairs.

- International collaborative partnerships among institutions should be fostered in order to offer high quality joint degree programmes targeting geographic and economic areas important to the country.
- An open and transparent incentive programme should be established to provide encouragement and support for internationalisation activities at institutions.

International higher education providers

- A quality control mechanism should be established and enforced, to ensure that programmes offered by international providers of higher education are of appropriate quality and that foreign providers have to meet the same standards and conditions as national providers, in practice as well as in law.
- The UNESCO/OECD Guidelines for Quality Provision in Cross-border Higher Education should be implemented (UNESCO, 2005a).

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Chapter 8: Research, Development and Innovation

This chapter discusses the Research and Development sector in Kazakhstan. It describes positive and negative legacies from the Soviet era and outlines reforms undertaken during the transition period and since.

Specific aspects of the R&D sector that are examined include infrastructure, funding, student involvement and human resources.

The review team makes a number of recommendations for improving the effectiveness of research in higher education institutions, including by establishing new university laboratories.

Background

The higher education institutions (HEIs) in Kazakhstan have well established research traditions. Evolved during the Soviet period, these show both the positive and the negative sides of Soviet tertiary education, though some features of the system had roots in earlier times when the German model of higher education was introduced in Russia.

In the Soviet system it was understood that higher education should always combine teaching and research. Thus the first Kazakh universities, established during the 1930s, were encouraged to develop research laboratories in all subject areas. During World War II, many leading Soviet scientists from the European part of the Union were evacuated to Kazakhstan to continue their research and provide the necessary human resources and technological expertise for the military industries. Many of these prominent researchers were placed in the new universities, where they organised schools in a number of technical and scientific fields. These laboratories continued to carry out good quality research during the period after the war. Another positive inheritance was the multinational context of research activities. The co-operation between scientists from the different

Soviet republics was extensive and contributed to heightening the level of research in all former republics, including the countries of Central Asia. In research activities Kazakhstan had a leading position among the Central Asian republics. The competitive research atmosphere contributed to higher research standards. The publication media for research outputs were multinational. The leading Soviet journals were translated into English, thus giving an international dimension to scientific activities.

Other positive features of the development of the R&D sector of Kazakhstan during the Soviet period are as follows:

- The rich national resources of Kazakhstan – including oil, natural gas, uranium and many other ore deposits, which were of crucial importance for the Soviet economy – led to the development in the country of serious technological experience in some important technical fields, particularly chemistry and physics. Training of specialists in these areas was a priority for the country and the research laboratories in the HEIs had relatively good standards in terms of human potential and equipment.
- Space research and training of specialists in the field became a priority for Kazakhstan, when the principal Soviet launch centre for space exploration was established at Baykonur Kazakh territory. Even today, space research remains one of the national priority areas for R&D activities.
- Because all HEIs in the Soviet Union were engaged in scientific research, career advancement for university lecturers was based almost entirely on achievements in research under the Higher Attestation Commission criteria and procedures.
- Many young Kazakh researchers and university lecturers completed their Candidate of Sciences or Doctor of Sciences degrees in leading laboratories in Moscow, Leningrad (Saint Petersburg), Kiev and other major research centres.

There were, however, many negative features:

- The funding of basic research was mostly allocated to the institutes of the Academy of Sciences of the USSR and to national academies in the former republics.
- The funding for applied research and technological development was concentrated in the vast networks of institutes under the former branch ministries.

- The distribution of funding was the result of central planning. Individual laboratories or researchers could not participate in grant competitions.
- Funding per researcher was low compared to the developed countries.
- The HEIs, except for a few prestigious universities in the European part of Soviet Union, were regarded as second-rate research organisations.
- Regulations required a very high teaching load from university professors, well above average international levels for research universities. The typical teaching load of a lecturer was 800 to 900 class contact hours a year. This legacy is visible even today in the teaching load of university lecturers in Kazakhstan, which compares to 180 to 240 contact hours in Canada, the United Kingdom and the United States.
- Contacts with foreign scientists (outside the USSR) were restricted, preventing the research organisations in Kazakhstan from developing as part of the international scientific community. University professors were unable to establish fruitful co-operative projects with colleagues from developed countries.
- The atmosphere of secrecy and restrictions on publication, especially in foreign journals, contributed to the isolation of the Kazakhstan scientists from international developments in many fields.

In spite of these difficulties, the higher education institutions in Kazakhstan were able in Soviet times to attract many talented specialists, who established good research traditions.

The challenges of the transition period

Developments in scientific research since 1992 cannot be separated from the dramatic changes associated with independence and the gradual transition to a market economy. The initial economic crisis made it difficult for the government to design and implement cohesive and long-term policies in the R&D sector, including research and innovation. Funding as a percentage of GDP has not recovered to the 1992 level since (see Figure 8.1 and Table 8.1).

Figure 8.1 **Funding of the R&D sector as a percentage of GDP in different countries**

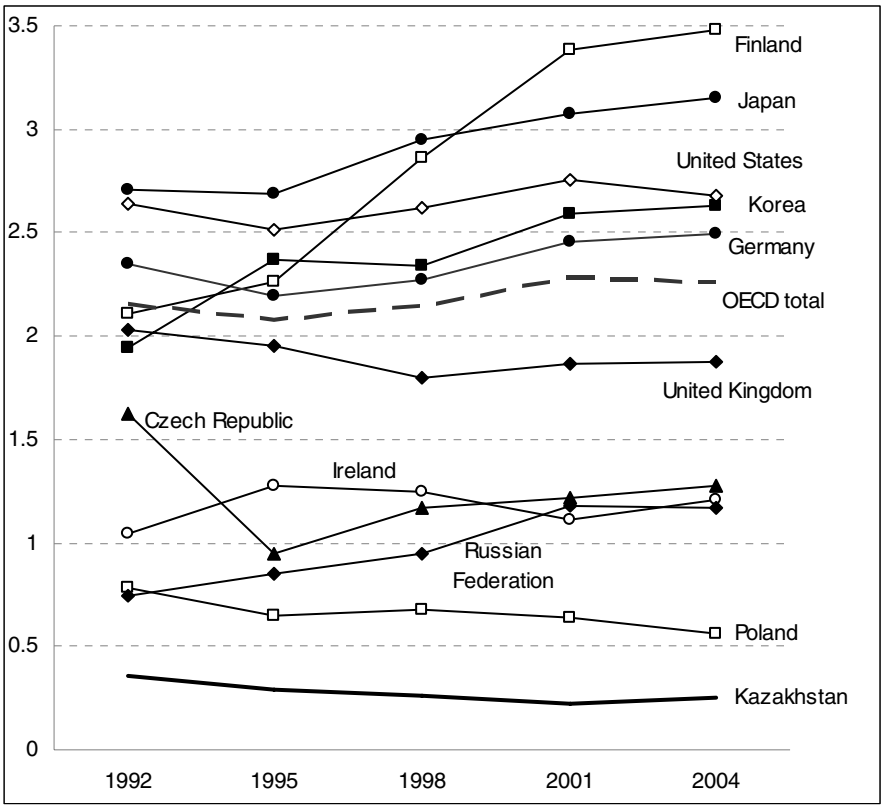


Table 8.1 **Funding of the R&D sector as percentage of GDP in different countries**

	1992	1995	1998	2001	2003	2004
Austria	1.42	1.54	1.77	2.03	2.19	2.26
Belgium	-	1.72	1.90	2.11	1.89	-
Czech Republic	1.62	0.95	1.17	1.22	1.26	1.28
Finland	2.11	2.26	2.86	3.38	3.48	-
France	2.33	2.29	2.14	2.20	2.18	2.16
Germany	2.35	2.19	2.27	2.46	2.52	2.49
Greece	-	0.49	-	0.65	0.62	-
Ireland	1.04	1.28	1.25	1.11	1.19	1.21
Japan	2.71	2.69	2.95	3.07	3.15	-
Kazakhstan	**0.36**	**0.29**	**0.26**	**0.22**	**0.25**	**0.25**
Korea	1.94	2.37	2.34	2.59	2.63	-

Poland	0.78	0.65	0.68	0.64	0.56	-
Sweden	-	3.35	-	4.29	3.98	-
Turkey	0.49	0.38	0.50	0.72	-	-
United Kingdom	2.03	1.95	1.80	1.87	1.88	-
United States	2.64	2.51	2.62	2.76	2.68	2.68
EU15	1.85	1.78	1.79	1.90	1.91	-
OECD total	2.16	2.08	2.15	2.28	2.26	-
Russian Federation	0.74	0.85	0.95	1.18	1.29	1.17

Source: OECD (2006b), *OECD Factbook 2006: Economic, Environmental and Social Statistics*, OECD, Paris; Suleymenov E. Z., E. A. Galanz and N. V. Vassileva (2006), "Dinamika nauchno-tekhnicheskogo potentsiala Respubliki Kazakhstan za 2001-2005 gg" (Dynamics of the Science and Technical Potential of Kazakhstan for 2001-2005), Ministry of Education and Science, Almaty.

From a low of 0.22% in 2001, it had risen to only 0.25% by 2003, still very low by international standards. By 2005, Kazakhstan was spending 0.29% of GDP on R&D and the ambition of the Kazakhstan Government is to increase the overall funding substantially. The government appreciates that a sustainable economy cannot rely on a single industry (oil) and that diversification and development of the high technology sector are vital for the country's successful future. As already discussed, the emergence of a strong R&D sector and solid tertiary education has become a priority for the government's economic strategy.

The three principal types of organisations forming the research sector in the country – the institutes of the National Academy of Sciences, the higher education institutions and the applied research institutes under sector ministries – were affected in different ways by the changes and reforms during the transition period. The network of research institutes belonging formerly to the National Academy of Sciences is still functioning, though now as part of several research centres under the Ministry of Science and Education (MOES). Some of these institutes and laboratories were transferred and became units of HEIs, while the National Academy of Sciences was turned into a representative body of researchers. The research institutes and many leading scientists were unhappy about these changes and worried that the government might initiate further transfer of research institutes (RIs) to HEIs in order to facilitate the integration of education and research. Nonetheless, the solid research traditions in the former academic institutes still allow their scientists and laboratories to be quite successful in competitions for grant funding. With less than one third of all researchers in the public R&D sector, the RIs usually receive about 80% of MOES competitive funding, according to HEIs visited. Scientists from HEIs, however, complain that the granting process is not transparent and that lobbying influences the assessment of project proposals.

The research organisations most seriously affected by the socio-economic changes were the applied research institutes belonging to the former branch ministries. Since most branch ministries associated with different industries were dissolved, many of these institutes were privatised or closed down. The new private enterprises did not have sufficient economic strength to invest in research and innovation, and lacked managers with the experience and vision to take care of both everyday business, and the future development of their companies. Nonetheless, a number of the more effective institutes were preserved as functioning units. A good example in this respect is the network of research institutes under the jurisdiction of the Ministry of Agriculture.

Most research institutes inherited from the Soviet system were overstaffed. A process of gradual reduction in the number of researchers took place from 1992. Some – generally the most talented and most entrepreneurial – left the sector and went into private business, which offered better opportunities and higher salaries. A number of researchers also left the country to pursue careers abroad. The number of researchers decreased from 41 000 in 1990 to 18 900 in 2005 (World Bank, 2006).

Research activities in Kazakhstan's higher education institutions were also negatively affected during the transition period, for a number of reasons. Overall funding of research in the country remained quite low, as noted earlier. In spite of good traditions in certain fields, the negative features of the Soviet legacy were difficult to change in the absence of clear national policies. Equipment and infrastructure were poor and ageing. The high teaching load, with typically 20 to 26 class contact hours per week, left limited time for research activities. Fewer young talented specialists took up doctoral studies and teaching positions because of very low stipends, while the salaries of academic staff were 2 to 3 times lower than the average in the private sector, 4 to 5 times lower than in the banking sector. The social status of university lecturers sank quite low, and the age structure of academic staff became skewed. Research teams from established universities became less able to compete for national research funding; and with few exceptions the research activities in the newly established non-public HEIs were quite limited, despite explicit requirements in their statutes. Meanwhile, funding from international research programmes and projects was scarce, though most HEIs were eager to develop links with foreign partner institutions.

Reforms undertaken

Following economic and financial stabilisation, the government of Kazakhstan carried out a number of reforms, which will greatly affect the

entire R&D sector including research in HEIs. The government understood that deeper integration of education and research would be a key element in training the new type of specialists that would help Kazakhstan become a successful 21st century country; and realised that more than half of all researchers in the country work in HEIs. The Programme on Formation and Development of the National Innovation System of the Republic of Kazakhstan for 2005-15 defines the national innovation system as a system that includes mechanisms of generation, dissemination and commercialisation of knowledge. Scientific and educational institutions, in particular HEIs, are considered as important elements of this system.

The most serious changes are envisaged for the period 2006-10 and further, to 2015. However, though the plans are quite ambitious, little by way of implementation has been observed so far.

Among the most significant reforms so far are the following:

- A competitive grant system for funding research activities, the MOES Science Fund, which, from 2007, becomes a separate legal entity, mostly finances projects coming from research institutes, but also some from HEIs.
- Similar granting mechanisms adopted by other ministries, especially the Ministry of Industry and Technology and the Ministry of Agriculture. The former has established a USD 100 million National Innovation Fund, but it appears that most of the funding only covers short-term low interest loans: just 5% is available as grant for applied R&D.
- The transfer to MOES in 2004 of the large network of research institutes belonging to the National Academy of Sciences.
- The government has approved a list of priority areas for research activities, defined taking into consideration the expected areas of intense economic development, the natural resources of the country, the need to develop a successful, high technology industry and other factors.
- Several research institutes were made an integral part of universities in order to strengthen the research potential of the higher education system.
- HEIs considered as having the best potential for training and research were granted the status of national universities. These institutions have better funding and can pay higher salaries to academic staff.

- A Higher Scientific-Technical Commission, chaired by the prime minister, was established. This consists of 28 members including top scientists, science managers, ministry officials, and industry representatives, and will be responsible for setting up national priorities in science and technology.

Reforms planned in the next phase include:

- Increasing the share of GDP allocated to R&D to 2% by the year 2012. This will bring Kazakhstan to around the average level of funding in European Union countries. Further increases are envisaged for the subsequent years. It is, however, an ambitious target, given that the percentage of GDP allocated for R&D in 2006 is just 0.3%.
- Establishing a network of five new national research service centres with modern infrastructure and equipment. The Centres will serve the existing research organisations by making available up to date equipment and information resources.
- Opening a new international university in Astana, which will have excellent infrastructure and modern laboratories.
- Establishing, in existing HEIs, new specialised laboratories, three for each priority interest area, provided with modern equipment. The development of these laboratories will strengthen both the research and educational capacities of these universities. However, the full funding needed for them has yet to be secured. MOES officials asked for the review team's advice on how these laboratories should be set up, managed and integrated into the universities. The team's suggestions are in Box 8.1.

Box 8.1 Review team recommendations for setting up new university laboratories for each priority interest area

- The Kazakhstan Government is undertaking an important initiative aimed at advancement in research and education in the areas they have defined as priorities for the development of the country. These priority fields include: nuclear research and technologies, space research and technologies, biotechnology, new materials and nanotechnologies, oil and gas technologies, and social sciences. The initiative envisages establishing by 2012 one national centre and three university-based modern laboratories for each priority interest area. All of these research units are envisaged as centres of excellence in the different fields. Kazakhstan can draw inspiration from similar centres of excellence in other countries, described in Chapter 4.
- The mission of the university-based laboratories includes leading the higher education sector

in both research and teaching in the priority fields. These modern units will support the further integration of research and teaching and enhance the capacity of the higher education system to train high level specialists. To do this effectively, the review team suggests that they need to combine three functions:

- As centres of research excellence, they will conduct cutting edge research and ensure its publication in international journals;
- As centres for the dissemination of good practice, they will lead reform of university teaching and learning in their subjects, holding conferences and training researchers from other universities;
- As centres for development and innovation, they will lead engagement with business and industry to exploit the results of scientific research for the benefit of the economy.

- The OECD review team recommends that the university-based laboratories need to be established following the principles listed below:
  - The universities that will host these laboratories should be selected by a competition open to all Kazakhstan HEIs offering the priority subjects or related subjects. The competition should be based on transparent and objective criteria, including academic, economic, international and regional development aspects.
  - The government will need to ensure that the laboratories have the funding, equipment and operating autonomy they need to fulfil all aspects of their mission.
  - The laboratories should be organised as an integral part of their host higher education institutions. Once the host HEIs have been selected, they should have an important role in planning the laboratories' activities.
  - The laboratories should have a legal status independent from the MOES and separate from, though associated with, their university, which will allow them to receive funding from government and other sources, and to co-operate with other HEIs, research institutes and enterprises.
  - As independent entities in the higher education sector, they should have their own governing boards with external representation, but to ensure consistent strategies and close co-operation with their host universities, a number of governing board members should be common to both.
  - International experts should be invited to help the laboratories develop their strategy and action plans.
  - The recruitment of the right staff for these laboratories is extremely important, and should be seen as an internationalisation opportunity. They might, for example, bring in overseas experts for a period and aim to recruit specialists returning from studies abroad under the Bolashak Programme.
  - Once the laboratories have been set up, their governing boards should have the right to adjust plans for activities and equipment in the light of experience.

Later sections of this chapter will analyse different aspects of the current research activities in Kazakhstan higher education institutions, and make recommendations for further improvements in the sector.

Legislative framework for research activities

The legal basis for science and innovation in Kazakhstan includes different types of documents: strategies, concepts, programmes, laws, orders, and decrees. HEIs, however, are mostly subject to laws on education, where R&D and innovation activities are mentioned very little, if at all. In science-related legal documents, HEIs are mentioned episodically, though in general they are regarded as elements of the innovation system.

The main strategic documents define the innovation system in the same way as developed countries. They also evaluate the strengths and weaknesses of the national innovation system. The documents identify more weaknesses than strengths, but the review team notes that recognition of the weaknesses is the first step to addressing them. The identified strengths include recent developments in R&D and innovation policy; new financial mechanisms being established; introduction of a competition based approach to financing of R&D; initiation of organisational reform; and willingness to study and learn from best international practice. Identified weaknesses include the state of Kazakhstan research as a whole; imbalances between different types of research; the incomplete nature of most R&D results, the lack of modern effective mechanisms for commercialising R&D; an underdeveloped innovation infrastructure, both technical and financial; lack of demand for innovative products; the worsening material basis for research in HEIs, especially technical universities; the almost completely eroded basis for practical training of students; insufficient involvement of higher education teachers in research, adversely affecting the quality of university teaching; and the low effectiveness of postgraduate training.

The major laws, which provide a general framework for research and innovation activities, include the Law on Science (2001), the Law on Innovative Activities (2003), the Patent Law (1999) and the Law on State Support of Innovative Activities (2006). However, some key implementation provisions are in presidential orders and government decrees. In general, the legal basis continues to reflect the Soviet legacy. Documents related to the educational system deal with integration of research and education in terms of co-operation between HEI and research institutes, but say little about the development of research and innovation in HEIs. Moreover, integration is mainly discussed in conceptual and strategic

documents, not in laws or orders; this inhibits integration in practice. Although the review team was not able to study all the subordinate legislation in detail, it appears that the legal framework needs development if it is to support reforms effectively.

The legal framework particularly needs strengthening to describe and support the development of linkages between government, universities and industry, and to clarify issues such as ownership, intellectual property rights, commercialisation, and the creation and functioning of public-private partnerships. At present, there are too few incentives for state universities and research centres to develop and commercialise their discoveries and innovations. Public HEIs are prohibited from financing commercialisation of R&D and from creating spin-off companies. The review team sees a particular need for change in the areas described below.

The low participation of HEIs in science and innovation policy development can be linked to the fact that the HEIs are not in law "state research organisations", although the technology parks created around HEIs are. According to Government Resolution No. 66 of 2003, HEIs may establish organisations of innovative infrastructure such as incubators, technology parks, and innovation centres. The establishment of innovative infrastructure, however, cannot solve all the problems associated with technological development. There are few examples to date of R&D products with commercial value, and demand for R&D products from industry has been low.

There are no real stimuli for commercialisation of intellectual property (IP) created at budgetary expense. The Laws stipulate that unless there is a contractual agreement which provides otherwise, the state owns the IP created in whole or in part with budget funds and has the exclusive right to commercialise the invention; the inventor receives author rights, but not a share of the commercialisation proceeds; and the research institution receives an exclusive right to use the invention, but not to commercialise it or retain even a portion of the commercialisation proceeds. This lack of incentive for public universities and research institutes to commercialise inventions also discourages the development of relationships between universities and industry. Private universities are less circumscribed, but most of them specialise in social sciences (especially economics, management, and law) and humanities, rather than the scientific disciplines likely to yield commercial products.

The gap between research and innovation could be bridged through improvement of the legislation for innovation activities. Public HEIs should be given more flexibility and be allowed to enter into a variety of public-private partnerships. The national universities need to pay special attention

to this matter. These universities are allowed to have research institutes in their structure, so the legal conditions for commercialisation of R&D are particularly important for them. The first steps may be to lower the administrative barriers to innovation activity and introduce simplified accreditation mechanisms and procedures for establishing spin-off companies.

The legal basis for grant support for research projects is also underdeveloped in Kazakhstan. Different forms of financial support for research in universities should be encouraged. The experience of developed countries demonstrates that grant based projects initiated by researchers are especially beneficial for university research. The grant form of financing also allows students to be involved in the development of research projects, thus enhancing the quality of training.

Funding and support institutions

Several new state institutions were established in recent years to support and stimulate R&D activities. Among them are the Science Fund, the National Innovation Fund, the National Investment Fund, the Centre for Marketing and Analytical Research, the Centre for Engineering and Technology Transfer, and the Development Bank of Kazakhstan. However, these institutions are still young and are not yet having a significant impact on R&D. A serious problem is that even organisations called "Funds" are under the full control and governance of government agencies and so unable to provide flexible and independent support for research and innovation.

The grant system of financing, including the Science Fund, is heavily regulated and supervised by the government. Areas of grant support are determined top-down. The Science Committee within the MOES finances basic research and scientific infrastructure, equipment, refurbishment, travel allowances etc, but Kazakhstan has no organisations like the National Science Foundation in the United States, or the Russian Foundation for Basic Research, to support new research initiatives and projects.

However, several advisory bodies have been created to advise the government on research and innovative developments. Among the recently established bodies are the Higher Scientific-Technical Commission (established in 1999), the Inter-Agency Board for Co-ordination of Innovative Activities (2001), which is an advisory body to the central and local authorities in the area of implementation of innovation policy, and the Co-ordination Board for the Realisation of Industrial Innovation Policy (2003). A positive feature of the Higher Scientific-Technical Commission is that it includes international experts, although these tend to be from the

former Soviet Union. However, it meets irregularly, is not independent and its decision making process lacks transparency. In general, participation of universities in these advisory bodies and commissions is insignificant. Of the Commission's 28 members, only two are university rectors, and there are no university representatives on the two boards.

In addition, different forms of financial support for research in universities should be encouraged. The experience of developed countries demonstrates that competitive grant-based projects initiated by researchers are especially beneficial for university research. The grant form of financing also allows students to be involved in the development of research projects, thus enhancing the quality of training. However, the grants need to be large enough, and the success ratio high enough, to make them worth competing for.

Infrastructure and information resources for research

At the HEIs visited by the OECD team, institutional leaders and administrators expressed deep concern about the state of the infrastructure in their research laboratories. Equipment is old and outdated, meaning that even laboratories with very good traditions have limited potential to carry out competitive scientific research. The situation is made worse by serious deficiencies in the information resources available at university libraries. Today, peers in other countries regard subscriptions to major scientific databases, special research search engines and electronic versions of the leading scientific journals as essential tools – but these are rarely available to researchers in the universities of Kazakhstan, which inhibits research activities and the integration of teaching and research.

Some institutions have made small steps in the right direction by subscribing to electronic journal packets. However, the most important scientific journals are not available this way, requiring separate subscriptions. The situation could be substantially improved if scientific databases such as ISI Web of Knowledge (Thomson) and Scopus (Elsevier Science) are made available to HEIs. Acceptable financial terms for these subscriptions can be negotiated.

Problems with information resources also impact adversely on the quality of education. Students can only carry out their independent study and individual projects effectively if fast Internet links are available to the major information resources. In some of the universities visited, IT infrastructure was acceptable and the number of personal computers with Internet access was adequate. In others, the situation was unsatisfactory, with only two to three PCs per 100 students. Nevertheless, in most HEIs visited, the

management was aware of the need to develop the IT infrastructure and is taking steps to satisfy the needs of both students and academic staff. In general, the team believes that a dramatic improvement in IT infrastructure, subscriptions to databases and electronic versions of scientific journal could have a huge positive impact on both research and teaching.

Serious effort is also needed to improve the material base in the technical and natural sciences – recognised as priority areas for the country – and bring it up to the standards of the developed countries with which Kazakhstan hopes to compete. This may be quite a challenge, and will require special policies. HEIs have a poorer material base than the research institutes – one reason why they tend to lose out in grant competitions. It is suggested that improving the material base of university laboratories should become a priority for educational management at both national and institutional levels, and that new competitive grant-giving funds should be established. A number of countries in Central and Eastern Europe have done this successfully.

A number of the HEIs visited by the OECD team have recently established technoparks, to reflect government policies aimed at improving the capacity of the research organisations for technology transfer and scientific services. The expectations are that these technoparks will provide scientific backing for the development of certain industries and the services sector. These structures are also aimed at providing scientific services related to local investment initiatives and regional development. The technoparks visited, however, appear mostly to function as public relations arms of their HEIs and do not appear to provide services to university researchers that would assist the process of commercialising research products, such as independent accounting offices, specialised information resources, and management experience in technology transfer.

Funding of research activities

The funding of R&D activities in Kazakhstan is shown in Table 8.2. The data indicate that the financing of R&D during the period 2001-05 has risen 3.1 times while the rise of GDP for the same period is 1.8 times. Nevertheless, the percentage of GDP invested in R&D activities remains low by international standards (Tables 8.1 and 8.2, Figure 8.1), especially in view of the president's ambition for Kazakhstan to become one of the top 50 most competitive countries in the world.

Another useful international comparison is shown in Table 8.3. It provides information on the investment in knowledge in different countries. It comprises the total spending on R&D, tertiary education and software.

The data for Kazakhstan do not include software development and production. Nevertheless, it is clear that the current overall expenditure for R&D and tertiary education are relatively low.

Table 8.2 **Dynamics of GDP growth and the funding of R&D activities in Kazakhstan**[1]

Indicator	Year					
	2000	2001	2002	2003	2004	2005
GDP (billions KZT)	2 600	3 251	3 776	4 612	5 870	7 457
Percentage of GDP for R&D	0.18	0.22	0.25	0.25	0.25	0.29
Budget expenses for R&D (bil. KZT)	1.9	2.8	4.0	4.9	7.3	11.0
Budget share in total R&D expenses (in %)	4.04	39.4	41.7	42.2	50.0	51.2

Note:

1. USD 1 is equivalent to c. KZT 125.

Source: Suleymenov E. Z., E. A. Galanz and N. V. Vassileva (2006), "Dinamika nauchno-tekhnicheskogo potentsiala Respubliki Kazakhstan za 2001-2005 gg" (Dynamics of the Science and Technical Potential of Kazakhstan for 2001-2005), Ministry of Education and Science, Almaty.

Table 8.4 provides an alternative overview of R&D activities in different countries. It is seen that some of the most successful economies in the world (*e.g.* Sweden, Finland, and Denmark) have some of the highest numbers of researchers per 1 000 total employment, combined with a substantial share of expenditure from the GDP for research in the higher education sector.

Table 8.3 **Investment in knowledge (R&D, tertiary education, software) as a percentage of GDP in different countries**

	1994	1996	1998	2000	2002
Australia	3.9	4.0	4.0	4.3	4.1
Austria	2.3	2.3	3.2	3.2	3.4
Canada	4.5	4.2	4.1	4.7	4.7
Denmark	3.7	3.9	4.7	5.0	5.5
Finland	4.7	4.8	5.5	5.9	6.1
France	3.4	3.5	3.5	3.6	3.7
Germany	3.4	3.5	3.6	3.8	3.9
Greece	1.1	1.2	1.8	1.6	-
Ireland	2.6	2.7	2.5	2.6	2.4
Italy	2.0	2.1	2.1	2.3	-
Japan	3.9	4.1	4.5	4.7	5.0
Korea	-	5.2	5.5	5.8	5.9
Kazakhstan	**-**	**-**	**-**	**-**	**0.7**
Netherlands	3.4	3.6	3.7	3.9	3.8
Portugal	1.3	1.5	1.7	1.8	1.8
Spain	2.1	2.3	2.4	2.7	2.8
Sweden	5.1	5.5	6.0	6.9	6.8
United Kingdom	3.5	3.6	3.7	3.6	3.7
United States	5.4	5.9	6.1	7.0	6.6

Source: OECD (2006b), *OECD Factbook 2006: Economic, Environmental and Social Statistics*, OECD, Paris; Agency of the Republic of Kazakhstan on Statistics (2003), "Nauka Kazakhstana" (Science in Kazakhstan), Agency of the Republic of Kazakhstan on Statistics, Almaty (the data for Kazakhstan do not include software development and production).

Table 8.4 **Overview of R&D activities in different countries in 2003**

	% of business enterprise R&D performed in				Researchers (national totals)		Higher Education Expenditure on R&D	
	"High-tech" industries	"Medium high-tech" industries	"Medium low-tech" and "Low-tech" industries	Service industries	Full-time equivalent	Per 1 000 total employment	% of total expenditure	% of GDP
Australia	13.0	17.9	16.5	42.2	71 613	7.6	28.0	0.45
Austria	-	-	-	-	24 124	5.8	27.0	0.57
Belgium	42.2	24.8	15.3	14.5	34 562	8.4	18.4	0.43
Czech Republic	11.4	42.9	9.3	34.6	15 809	3.2	15.3	0.19
Denmark	35.8	14.8	8.8	39.7	25 546	9.2	23.1	0.60
Finland	55.7	16.4	11.8	13.4	41 724	17.7	19.2	0.67
Germany	30.3	53.6	7.0	8.5	264 721	6.9	16.8	0.43
Hungary	-	-	-	-	15 180	3.9	26.7	0.25
Ireland	50.4	6.5	11.4	31.6	9 386	5.3	22.4	0.25
Japan	41.8	37.9	11.4	6.8	675 330	10.4	13.7	0.43
Kazakhstan	**-**	**-**	**-**	**-**	**50 872**[1]	**6.6**	**27.4**	**0.07**
Korea	50.2	25.6	9.7	9.0	151 254	6.8	10.1	0.27

Portugal	-	-	-	-	17 725	3.5	36.7	0.34
Spain	26.8	26.4	15.2	27.3	92 523	5.6	30.3	0.33
Sweden	51.4	30.0	6.5	10.4	45 995	10.6	22.0	0.88
Turkey	-	-	-	-	23 995	1.1	64.3	0.43
United Kingdom	47.3	22.6	7.5	20.2	157 662	5.5	21.4	0.40
United States	36.6	16.3	6.4	39.1	1 261 227	9.3	16.8	0.44
EU15	39.5	34.1	9.3	14.8	1 046 547	6.1	21.9	0.43
EU25	-	-	-	-	1 160 305	5.8	21.9	0.40
OECD Total	-	-	-	-	3 380 903	6.6	18.7	0.42

Note:

1. Including the lecturing staff in HEIs.

Source: OECD (2005c), *Research and Development Expenditure in Industry: 2004 Edition*, OECD, Paris; OECD (2005a), *Main Science and Technology Indicators: Volume 2005*, OECD, Paris; Agency of the Republic of Kazakhstan on Statistics (2005c), *Statistical Yearbook of Kazakhstan 2005*, Agency of the Republic of Kazakhstan on Statistics, Almaty; Suleymenov E. Z., E. A. Galanz and N. V. Vassileva (2006), "Dinamika nauchno-tekhnicheskogo potentsiala Respubliki Kazakhstan za 2001-2005 gg" (Dynamics of the Science and Technical Potential of Kazakhstan for 2001-2005), Ministry of Education and Science, Almaty.

Table 8.5 **Allocation of funding among different research organisations in Kazakhstan for the period 2000 – 2005, in million USD**

Year	Total in Kazakhstan	Research institutes	Design organisations	HEIs	Enterprises	Others
			Budgetary funding			
2000	13.71	10.74	0.06	2.79	0.12	0.00
2001	19.00	4.01	3.90	8.76	1.33	1.00
2002	26.00	11.59	0.18	13.01	0.03	1.19
2003	32.59	13.47	0.25	14.92	0.05	3.90
2004	53.54	34.46	1.29	12.37	0.03	5.40
2005	82.90	62.80	0.66	15.91	0.01	3.52
	227.74	137.07	6.33	67.75	1.57	15.01
			Non-budgetary project funding			
2000	12.38	6.71	1.34	1.65	1.69	0.97
2001	17.14	2.97	3.44	3.82	6.72	0.21
2002	19.51	13.90	1.06	4.23	0.00	0.31
2003	30.06	18.14	3.33	4.38	0.00	4.21
2004	31.05	21.19	3.76	2.23	0.54	3.34
2005	42.81	26.07	5.36	4.40	0.02	6.95
	152.94	88.98	18.30	20.72	8.96	15.99
			Own funding of enterprises			
2000	6.03	0.19	3.11	0.49	0.05	2.20
2001	10.85	2.85	4.38	3.40	0.19	0.03
2002	16.57	9.13	2.61	1.22	3.53	0.07
2003	10.81	6.72	0.94	0.92	2.22	0.02
2004	19.65	11.38	3.82	0.39	3.65	0.41
2005	33.06	23.89	3.54	1.31	3.39	0.92
	96.97	54.16	18.39	7.73	13.03	3.65

Source: Suleymenov E. Z., E. A. Galanz and N. V. Vassileva (2006), "Dinamika nauchno-tekhnicheskogo potentsiala Respubliki Kazakhstan za 2001-2005 gg" (Dynamics of the Science and Technical Potential of Kazakhstan for 2001-2005), Ministry of Education and Science, Almaty.

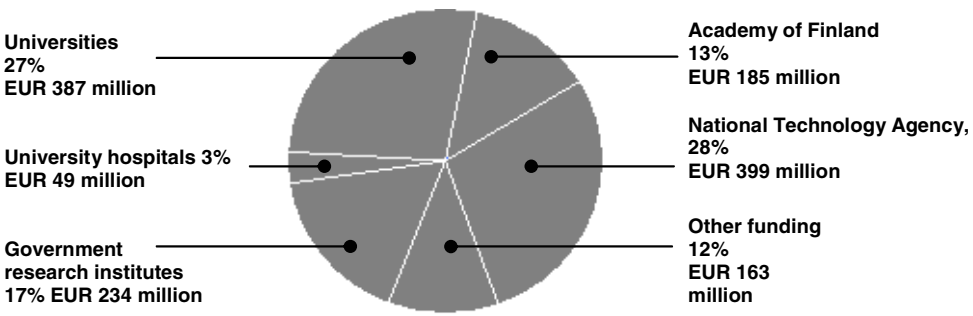
Table 8.5 provides information on the distribution of funding among the different types of research organisations in Kazakhstan for the period

2000-05. The data shows that most of the budgetary funding for research was allocated to the public research institutes (59.4%), with HEIs receiving 30.4%. The funding from external customers also goes mostly to public research institutes and HEIs. Funding for R&D from business enterprises again goes mostly to the public research institutes, while the share of HEIs (8.2%) is relatively small.

New funding mechanisms could be introduced to improve this unbalanced situation, such as competitive funding mechanisms aimed specifically at the development of research by HEIs. This will have spin-off benefits for their students. Special funding can also be introduced to encourage co-operative research activities involving HEIs, research institutes and enterprises. The projects funded might have the HEIs as contractors. The focus should be on the transfer of technologies originating from own research, as well as the transfer of know-how available in other countries. Existing legislation should be adapted to facilitate this and to encourage both institutions and researchers to participate in the process of commercialisation. Especially important is the introduction of real financial incentives for individual researchers to participate in the commercialisation of their innovative technologies and products. Special provisions can be introduced into laws and university statutes to ensure that researchers are granted a sizable percentage of patent and know-how rights.

A good example of balanced funding of R& D activities is offered by Finland. Figure 8.2 illustrates the division of among different research organisation in the country in 2003.

Figure 8.2 **Distribution of funding for R&D activities in Finland in 2003**



Source: Karjalainen, Sakari (2003), "Education and research in information society – national strategies", presentation made at the 2003 Conference on Users in the Electronic Information Environments, Espoo, Finland, September 8-9.

Student involvement in research

The participation of students in the research activities of the HEIs in Kazakhstan is a well-established tradition. The management teams of all universities visited by the OECD underlined that students, even those studying for Bachelor's degrees, are involved in research. In Kazakhstan, a diploma thesis in the final semester is an integral part of the academic programme. The quality of these studies very much depends on the level of research in the relevant departments and universities.

A weakness in current arrangements is the very small number of students continuing into Master's degree studies. According to Kazakhstan official statistics (NCEQA, 2006), only 0.39% of all higher education graduates go into postgraduate education. The Master's students are all involved in research activities and usually their theses in many subjects represent publishable scientific studies. The management teams of all HEIs visited were in favour of much larger participation of students in Master's studies and the MOES seems to favour such a development, which would correspond to the practice in developed countries and also reflect the needs of the economy for specialists with advanced training.

The third level of higher education studies is still the *Aspirantura*. It leads to the degree of Candidate of Sciences. The *Aspirantura* involves primarily research studies. Success requires the preparation of a sizable dissertation and the publication of a series of research articles on a specific theme. The dissertation is defended before a scientific council, appointed by the Committee for Supervision and Attestation. The Candidate of Sciences degree has a very good reputation in the country and HEIs constantly try to attract holders of Candidate of Sciences degrees as lecturers. However, as a result of Kazakhstan's adoption of the Bologna process, the *Aspirantura* will be phased out in 2008 in favour of the Doctor of Philosophy degree.

In accordance with international practice, the PhD studies will involve research activities plus specialised training via selected courses. Table 8.6 contains data on doctoral (Cand. Sci.) students in Kazakhstan for the period 1998-2005. Nearly 84% of all doctoral students are currently trained in HEIs. The rest carry out their studies in the public research institutes. The quality of training of master and doctoral students, the future leaders in all economic and state structures, is strongly dependent on the level of scientific research in the higher education sector. Thus it is essential that the government of Kazakhstan takes the necessary steps to improve the volume and quality of research activities in the higher education sector.

Table 8.6 **Doctoral students (for the degree Candidate of Sciences) in Kazakhstan during the period 1998-2004**

		Total number of students	Admitted students	Defended Cand. Sci. theses
Total	1998	5 272	1 856	140
	2000	4 691	1 467	191
	2002	5 321	1 154	113
	2004	5 665	1 503	139
Research institutes	1998	1 199	443	32
	2000	717	232	33
	2002	927	354	31
	2004	922	-	-
Higher education institutions	1998	4 073	1 413	108
	2000	3 974	1 207	158
	2002	4 394	1 583	82
	2004	4 743	-	-

Source: Agency of the Republic of Kazakhstan on Statistics (2003), "Nauka Kazakhstana" (Science in Kazakhstan), Agency of the Republic of Kazakhstan on Statistics, Almaty; Agency of the Republic of Kazakhstan on Statistics (2005c), *Statistical Yearbook of Kazakhstan 2005*, Agency of the Republic of Kazakhstan on Statistics, Almaty.

Human resources in R&D

Human resources involved in R&D in HEIs include the academic staff, technicians, supporting staff, and other workers (auxiliary services, etc.). Traditionally in all former Soviet republics, including Kazakhstan, research and teaching were separated. This separation was apparent in division of workers conducting R&D in HEIs into two groups: teaching staff who could participate in research and scientists in research positions who conducted R&D and only in exceptional cases taught. These two groups continue to co-exist at the present time. In the Kazakh national universities that possess research institutes, up to 80% of teaching staff are involved in research projects through these institutes. Survey data (Gurevich and Suleymenov, 2006) indicate that about 25% of university teachers also hold appointments at research institutes.

Table 8.7 shows that from 2001-05 there was a steady increase in personnel in R&D overall, but fluctuations in numbers in the HEIs. The number of purely research staff in higher education institutions fell over the

period: there was a particularly sharp fall in 2003-04, as researchers left scientific subdivisions.

Table 8.7 **Dynamics of human resources involved in R&D in Kazakhstan**

	Year				
	2001	2002	2003	2004	2005
Total personnel in R&D	15 339	15 998	16 578	17 343	18 912
Changes, in % to the previous year	103.6	104.3	103.6	104.6	109.0
HEIs (researchers and lecturers) [1]	41 353	45 147	47 102	46 128	47 417
From HEIs total, personnel on research positions	6 845	7 542	6 130	3 795	4 035
Changes of personnel, in % to the previous year	159.0	110.2	81.3	61.9	106.3
Share of HEIs personnel on research positions in total personnel conducting R&D, %	44.6	47.1	37.0	21.9	21.3

1. Including all lecturers, both conducting and not conducting research

Source: Suleymenov E. Z., E. A. Galanz and N. V. Vassileva (2006), "Dinamika nauchno-tekhnicheskogo potentsiala Respubliki Kazakhstan za 2001-2005 gg" (Dynamics of the Science and Technical Potential of Kazakhstan for 2001-2005), Ministry of Education and Science, Almaty, p.20.

Table 8.8 gives a further breakdown, showing that the proportions of different types of personnel involved in R&D did not change much over time: the share of researchers among R&D personnel at HEIs is above 85% while other categories are insignificant. The structure of human resources in HEIs is less balanced than in science in general. In particular, there seem to be too few technicians.

It has been shown (Suleymenov, Galanz and Vassileva, 2006) that at present the ratios between researchers, designers and specialists involved in development work is 25:4:1, while in most developed countries it is 1:2:4. This reflects the fact that in the HEIs and research organisations the modelling shops and development facilities have deteriorated. The commercialisation of R&D products in these units is, therefore, difficult – if not impossible.

Table 8.8 **Structure of human resources involved in R&D in Kazakhstan**

	Year				
	1998	1999	2000	2001	2002
Structure of total R&D personnel, %	100	100	100	100	100
Researchers	62.2	62.2	61.1	60.1	58.5
Technicians	8.7	7.6	8.0	7.4	8.5
Support personnel	17.5	19.8	17.9	18.2	18.7
Other	11.6	10.4	13.0	14.3	14.3
Structure in HEIs, %	100	100	100	100	100
Researchers	87.6	86.2	74.6	85.8	-
Technicians	2.9	2.2	4.8	4.2	-
Support personnel	5.7	5.1	12.3	9.6	-
Other	3.8	6.5	8.3	0.4	-

Source: Agency of the Republic of Kazakhstan on Statistics (2003), "Nauka Kazakhstana" (Science in Kazakhstan), Agency of the Republic of Kazakhstan on Statistics, Almaty, p.13.

Data on the age structure of researchers in Kazakhstan is available only for the whole R&D sector, not by type of institutions. The age structure of researchers has not changed much since 1998 (Table 8.9), although the percentage of researchers under 30 increases, while there is a substantial decrease in the percentage of middle-aged scientists. Whereas the total number of researchers dropped by 14.4% between 1998 and 2002, the number of researchers aged between 31 and 39 plummeted by 24%, and the number of those aged between 40 and 49 fell by 24.3%. This may be an indication that many young people are channelled into science, but only stay in research until they find a better paid job or can go abroad.

The level of competence in R&D in Kazakh HEIs is probably lower than in the pure research organisations. According to the Kazakhstan Confederation of Employers, their member enterprises prefer to outsource R&D projects in applied research institutes or in other countries, such as Russia.

Table 8.9 **Age structure of researchers in Kazakhstan**

	Year				
	1998	1999	2000	2001	2002
Total researchers	10 944	9 624	9 009	9 223	9 366
Structure, %	100	100	100	100	100
Younger than 30 years old	14.5	13.3	14.2	16.2	18.5
31-39	23.3	22.9	21.9	21.3	20.8
40-49	29.8	29.9	29.5	28.2	26.4
50-59	21.5	22.6	21.8	21,7	21.4
60 and above	10.9	11.3	12.6	12.6	12.9

Source: Calculated on the basis of data from: Agency of the Republic of Kazakhstan on Statistics (2003), "Nauka Kazakhstana", (Science in Kazakhstan), Agency of the Republic of Kazakhstan of Statistics, Almaty, p.17.

Currently there appear to be insufficient stimuli for the teaching staff in HEIs to increase their involvement in research or innovation activities. Stronger engagement in research is hampered by heavy teaching loads and other obligations related to education. The introduction of the credit system has led to a growing amount of work related to the development of written materials for students to use during their independent studies. So the class time released by moves to independent study has been absorbed by new teachers' obligations.

Also, salaries at HEIs do not encourage integration of research and teaching. As surveys show, teaching salaries are generally higher than those of researchers in HEIs and other research institutes. The average salary for teaching positions is KZT 26 419 per month, while at research positions in HEIs it is KZT 22 068 (Gurevich and Suleymenov, 2006). The position of researchers at HEIs is also weakened by the instability of their employment arrangements. Researchers in HEIs often work under short-term contracts.

The qualification of researchers is another important factor that influences the quality of R&D activities. International experience shows that human resources are well structured by qualification if there are 10 holders of candidate of science degrees for every doctorate degree holder (Kulevskaya, Kulumbetova and Zharkova, 2006). By this measure, Kazakhstan has too many researchers with doctorates: though the situation is better in HEIs than in research generally (see tables 8.10 and 8.11).

Table 8.10 **Researchers with the highest degrees in Kazakhstan**

	Year				
	1998	1999	2000	2001	2002
Total researchers with candidate or doctorate degrees	4 363	3 925	3 747	3 694	3 630
Doctorate, %	22.3	24.0	25.3	25.4	26.0
Candidate, %	77.7	76.0	74.7	74.6	74.0
Researchers with candidate and doctorate degrees in HEIs	388	236	1 108	699	-
Doctorate, %	14.9	18.6	27.2	22.2	-
Candidate, %	85.1	81.4	72.8	77.8	-

Source: Agency of the Republic of Kazakhstan on Statistics, (2003), "Nauka Kazakhstana" (Science in Kazakhstan), Agency of the Republic of Kazakhstan on Statistics, Almaty, p.16.

Table 8.11 **Lecturers with highest degrees in HEI in Kazakhstan**

	Year				
	2001/02	2002/03	2003/04	2004/05	2005/06
Lecturers with candidate and doctorate degrees in HEIs	13 092	14 110	14 122	15 078	15 642
Doctorate, %	17.7	17.7	17.8	18.1	18.3
Candidate, %	82.3	82.3	82.2	81.9	81.7

Source: Agency of the Republic of Kazakhstan on Statistics (2006), "Obrazovaniye v Respublike Kazakhstan" (Education in the Republic of Kazakhstan), Statistical bulletin, Agency of the Republic of Kazakhstan on Statistics, Almaty, p. 86.

The mobility of academic staff also affects the quality of human resources involved in R&D. The government's mobility policy is not well developed. There is no evidence that special measures are taken to encourage mobility within the country or to prevent brain drain and stimulate the return of researchers who have emigrated. In this respect the experience of China and Korea seems to be relevant: these countries were able to attract back about one third of the emigrated scientists by offering them modern laboratories, competitive salaries and autonomy in their research. Another approach is to initiate dynamic innovation activities by establishing companies at science parks (United Nations, 2005). The Bolashak Presidential Scholarship Programme could be used to train not

only researchers, but also highly qualified innovation managers, specialists in the area of intellectual property rights and other specialists important for the development of research and innovation in Kazakhstan. In addition, the programme could be better linked to a concrete strategy and related mechanisms to attract qualified scientists back to the country.

The availability and quality of research equipment is one of the strongest factors attracting youth to science. The review team found that equipment standards vary with the policies of university management. In some HEIs the rectors assign a substantial amount of support for research from their own (university) funds, considering the level of research as a factor that may increase their competitiveness. In these HEIs, equipment is more up to date than average.

Other ways to boost HEIs' human resources include retraining personnel and inviting well-known scholars to Kazakh HEIs to teach and conduct research. Presently, only two national universities receive special financing from the government to invite foreign scholars. Some private HEIs try to encourage this type of mobility using their own funds. The government can encourage such initiatives by providing funding on a competitive basis open to all HEIs.

Other issues and trends in R&D

Publication activity of the academic staff in HEIs

No national statistical data for the publications of researchers in Kazakhstan is available. The information gathered during the visits to HEIs by the OECD team shows that the publication activity of researchers in HEIs varies from 1.5 to three scientific papers per year. It appears also that researchers from the HEIs have traditional access for publishing in Russian specialised scientific journals. Publications in other international journals are, however, quite limited. A number of departments, especially belonging to the national universities, have reported that their best researchers tend to publish their studies in reputed international journals. Table 8.12 provides a comparative survey of scientific publications in journals covered by the ISI Knowledge database of the Institute for Scientific Information in Philadelphia. It should be noted that ISI Knowledge covers also the publications in the most important Russian journals, usually translated into English. It appears that the level of papers published by Kazakh researchers is still extremely low. It has increased in recent years, but other countries that have done better include Korea and Turkey.

There is no doubt that, as international co-operation increases, Kazakh scientists will substantially increase their publication activity. At institutional level the process can be aided by rewarding publications in internal criteria for assessments of the academic staff. At the national level special criteria may be set up by the Committee for Supervision and Attestation.

Table 8.12 **Publications of scientists from different countries for the period 1998-2005 in journals covered in ISI Knowledge, Institute for Scientific Information, Philadelphia**

Country	Publications					
	1998		2002		2005	
	Total number	**Per million population**	**Total number**	**Per million population**	**Total number**	**Per million population**
Japan	79 781	631.1	82 316	660.2	95 144	743.6
Germany	82 429	1 004.7	79 382	1 021.3	>100 000	1 454.8
France	57 774	989.3	54 836	953.4	69 013	1 136.2
Russia	29 688	202.1	27 197	181.8	28 072	196.1
Poland	9 864	255.1	12 239	390.3	17 006	445.6
Romania	1830	81.3	2192	112.5	3 005	138.9
Korea	12 096	261.3	18 750	516.6	31 574	653.8
Kazakhstan	**214**	**14.2**	**219**	**15.4**	**258**	**17.0**
Turkey	5 300	81.3	9 545	196.7	17 712	243.8

Source: Thomson (n.d.), ISI Web of Knowledge, *www.isiwebofknowledge.com*.

The role of the research institutes

As already discussed, Kazakhstan has an extensive network of public research institutes under different ministries. The existing strong traditions in many of these institutes are essential for the successful realisation of the national programs for research and technological development. Under the current legislation some of these institutes, especially those that were previously under the National Academy of Sciences, are granted the right to train doctoral students. There are also examples of co-operation between HEIs and research institutes (RIs) in the training of Master's degree students. Thus, qualified staff of the RIs are involved in the training of postgraduate students, a practice that needs to be encouraged further. The available material base in many of the RIs offers improved conditions for both master and doctoral studies. Many researchers from the institutes are also engaged in teaching in HEIs, usually as a second job. For some HEIs,

the participation of these researchers is essential to enable teaching to keep pace with developments in the sciences.

More extensive co-operation between HEIs and research institutes will contribute to further integration of research and education. Because of the different priorities and interests of HEIs and the research institutes the process of integration requires the implementation of careful and well planned policies. Experience in other countries has shown that there is no single or simple formula for reform in this respect. A country with the size and economic potential of Kazakhstan will always need good young specialists who have obtained a high quality education. The existence of strong research structures is also of vital importance for a country aiming to achieve a place among the fastest developing economies.

International dimension of research

The last 15 years of independent development were marked by increased integration of the country in international co-operation and initiatives. The scientific institutions of Kazakhstan were able to engage in many joint activities with foreign universities and international organisations. Particularly fruitful was participation in a number of European Union programmes. The involvement of Kazakhstan in the EU framework programme (FP) was initiated in 1994 with FP4. It is reported (Magzieva, 2005) that up to 2005 the EU granted over EUR 8 million to Kazakh scientific institutions to work on 174 projects under INTAS and INCO[11] initiatives. Researchers from 198 institutions participated in these projects. Fifty one projects were in the field of Earth Science and Environment; 44 in Life Sciences; 30 in Chemistry; 21 in Social and Human Science; 13 in Information Technologies; 15 in Physics and Space research. Kazakh scientists submitted 56 proposals for FP6, of which seven were approved for funding (Magzieva, 2005).

The HEIs visited provided extensive information on other types of international co-operation which contributed to improvement of their material base and led to valuable research outputs. The NATO Science for Peace program, the USAID (US Agency for International Development) initiatives, as well as EU educational programmes, such as TEMPUS and TACIS, have made a considerable positive impact in a number of HEIs.

11 INTAS: The International Association for the Promotion of Co-operation with Scientists from the New Independent States (NIS) of the Former Soviet Union; INCO: Specific International Scientific Co-operation Activities.

The integration of the Kazakh scientific community into international programmes and initiatives, and bilateral co-operation with foreign HEIs and research institutions, is welcomed and supported both at national and institutional levels. This should help to increase the role of the research and higher education sectors in meeting the economic and social goals of the country.

Recommendations

At the national level

- It will not be easy to achieve the goal of increasing the funding of research and technological development in Kazakhstan to 2% of GDP by the year 2012, while ensuring that the money is used cost-effectively and that a fair share of the increase goes to HEIs. An implementation advisory group should be set up, involving HEI representatives and international input, to advise the government on how best to achieve these aims.
- HEIs should be more involved in the development of science and innovation policy, including through participation in bodies advising government. This will help to strengthen research in universities, integrate research and teaching, and link research, innovation and educational policies.
- Special funding mechanisms should be introduced, to improve the material base, information resources and integration of research and teaching in HEIs. The team recommends a new Fund to grant financing on a competitive basis for projects in government priority areas.
- It is also recommended that a new competitive Fund be established to support development of the research potential of the HEIs. This Fund would provide mechanisms for financing the activities of research teams.
- It is also recommended that a new competitive funding mechanism be established to stimulate three party collaboration between HEIs, research institutions and enterprises, and support the transfer of technologies and the commercialisation of research products.
- Laws and regulations should be changed to reduce the current very high teaching load required of academic staff, and give them more

time for research. (This is also recommended in Chapter 5 to improve the quality of teaching and teachers.)

- Mobility schemes should be developed to improve the quality, relevance and international orientation of research in HEIs. The schemes would be for both research students and academic staff. They might take the form of industrial internships for Master and PhD students, exchange of personnel between companies and HEIs, consulting services to local companies from HEI staff, and international exchanges.
- To encourage individual researchers from all sectors to participate in applied research, technology transfer and the development of new products, their share in the profits from realised new products should be substantially increased, and any legal obstacles to this removed.
- To facilitate the process of commercialisation of research products, HEIs should be granted the right to establish spin-off companies. These companies could bring together HEIs, individual researchers and private capital in the development of new products.
- The Committee for Supervision and Attestation should revise its requirements for higher scientific degrees and academic titles, to give more weight to the publication of scientific papers in reputed international journals.
- The Bolashak Scholarship Programme should offer more of its places to science and technology students (including those studying for higher degrees) in areas identified as national priorities, including nuclear studies, space research and technology, biotechnology, nanotechnology, and oil and gas technologies.

At the institutional level

- HEIs should take account of research output, quality and publications in reputed international journals, when deciding which academic staff to promote.
- HEIs should encourage their academic staff to participate in national and international competitions for research grants. Most of the funding should go to the research teams.
- The Technoparks should extend their functions and offer services to researchers that would facilitate the transfer of technologies and commercialisation of research products.

- In order to reduce the teaching load of the academic staff without increasing costs, HEIs may wish to introduce a modular structure of course delivery.
- HEIs should make it a priority to dramatically improve information resources for both academic staff and students. They should subscribe to the most important Internet based information resources – databases such as IST Web of Knowledge and Scopus, as well as electronic versions of the leading journals in the different fields of knowledge. They should ensure that there are enough computers, with fast Internet access, to meet the study and research needs of all their staff and students.

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Chapter 9: Conclusions and Recommendations

This chapter outlines the conclusions of the review team and the recommendations made on each aspect of tertiary education in Kazakhstan.

Conclusions

Kazakhstan inherited a mixed legacy from the former Soviet Union, and suffered major economic and educational setbacks in the years immediately following the break up of the USSR. A vigorous, oil led recovery more recently has given it the means and the opportunity to reform its education system to meet the needs of a modern competitive economy. The country's government is keen to pursue this path and very willing to learn from international experience.

Kazakhstan's aim, declared by its president in March 2006, is that the country should become one of the world's 50 most competitive countries by the year 2015. It currently ranks 56th in the World Economic Forum's Global Competitiveness Index, thanks mainly to strong macroeconomic performance; but risks losing ground to other aspiring nations. As the government recognises, the key to success is more effective development of all of the country's human capital.

Kazakhstan's young people have high literacy levels, good language skills and the habit of living harmoniously with others of different races and religions. In general, they are ambitious and think it worth investing time and money in educational advancement, as is demonstrated by the 84% of university students who are fee-paying. Degree level qualifications and their holders are highly valued, particularly in scientific and technical subjects.

However, some aspects of Kazakhstan's education system have held back the country's young people and the country's competitiveness. The Soviet legacy includes the following unhelpful traditions: at undergraduate

and postgraduate levels, education course content is dictated in great detail by the education ministry, through State Educational Standards. The quality assurance system is more about enforcing control and compliance than about helping higher education institutions to improve. The economy's need for skilled workers is factored into educational policy via Ministries' manpower planning – liable to error even under the Soviet planned economy, patently unsound in a market economy – rather than via engaging employers in discussions, giving them influence over course content and seeking to meet their needs. Teachers and students are required to put in (by international standards) a great many hours in the classroom, imparting or receiving subject knowledge; limited attention is paid to the development of skills and competences. University teachers are respected, but not rewarded, overworked and underpaid, given little time and inadequate support to improve teaching and learning through professional development or keeping up their subject knowledge. These factors combine with high stakes university entry, progression and graduation tests to invite corruption in the system. Except in a few favoured universities, facilities, equipment and information infrastructure are poor by international standards, both for teaching and for research. The culture within the education system favours conservatism and excelling at what you know; it discourages innovation, creativity and enterprise.

The government of the Republic of Kazakhstan has recognised the need for change in education policy and strategy documents, reports on the system and proposals to revise education law. Reform efforts have been given high priority and many important steps, documented in this report, have already been taken. In discussions with the review team, the education minister and key officials were frank about the difficulties, acknowledging the need to go further and faster.

The initial remit for this report was confined to tertiary education and the visits programme focussed on institutions offering degree level higher education. However, during the review the team was asked by government representatives also to advise on the effectiveness of transition to higher education from secondary schools and colleges, and on reform plans for the school and college systems. Accordingly, the conclusions and recommendations in this chapter range widely; and the review team has sought to offer not only general advice, but also specific practical ways forward based on the team members' international education experience.

The government has already introduced a number of very useful reforms. In relation to students, these include: allowing the university sector to expand to meet demand, by giving equal rights to private higher education institutions; introducing a single national objective system for entry to all tertiary education institutions, in the form of the Unified

National Test (UNT), rather than each university operating its own; allowing students to attend the institution of their choice, if they pass the UNT; introducing a system of student grants, which should enable those who do best in the national test and choose national priority subjects to go to their chosen university whether they come from rich or poor families; enabling young people to study for degrees through evening classes or by distance learning as well as full-time; and setting up the Bolashak Programme to encourage and support international study.

In relation to what is taught in higher education institutions, commendable reforms include: moving from defining subjects very narrowly towards fewer, broader specialisms; reducing the scope of State Standards, so that instead of covering the whole of course content, they cover 50%, allowing universities and students to choose options for the other 50%; progressive adoption of the Bologna three-level model for courses, which will facilitate international recognition and mobility; and introduction of a transferable credit system.

In relation to the governance and management of higher education institutions and the system as a whole, the team noted with approval: the considerable autonomy enjoyed by higher education institutions, especially the private ones, in operational, management and financial matters; the recent establishment of the National Accreditation Centre, which is intended to usher in best international practice in higher education quality assurance; and the pioneering work done by the (also recently established) National Centre for Educational Quality Assessment in analysing and reporting freely and frankly on the performance of the education system.

Many more important education reforms are planned or are in the pipeline, including the introduction of a 12th year of schooling, which may be expected to have a dramatic impact on higher education. However, planned reforms are difficult to comment on, because even where the concept looks impressive and has been set out in some detail, all will depend on the implementation.

The government particularly invited the review team to give views on the **numbers going into higher education**. Among concerns put to the team were that too many students are going to university; that this may be making it difficult to maintain the quality and standards of the output, particularly from the private higher education institutions; and that too many young people are studying in certain areas not on the government's priority list, such as economics and law.

The team found that the number of students now in higher education in Kazakhstan is not excessive, in all the circumstances. Numbers may, however, be expected to drop sharply when 12th year schooling is

introduced and as the effects of falling birth rates feed through to the 19-to-24 age group from 2010.

There is no statistical evidence to show either that the system is producing too many graduate economists and lawyers, or that some students passing the UNT are not capable of benefiting from university education. If some seem unsuited to their courses, the team suggests this may well be due to the serious lack of information and guidance in schools to help young people make the right decisions about careers, further education and which institutions to apply to.

There are indications that graduates from scientific and technical courses are in short supply. A bigger labour market issue, however, is the inadequate numbers of people with lower tertiary vocational qualifications emerging from **colleges**. Government proposals to set up ten higher technical schools are sound, but the team also sees a need for college output to increase and for other system reforms. The team has studied the government's draft Concept for Vocational Education and Training (VET) Reform, and comments on it in Chapter 2. As the Concept recognises, it is clearly vital to competitiveness to develop the VET sector as a high priority; but the team is concerned that the implementation proposals do not envisage involving employers as equal partners.

Numbers going on to **postgraduate** education – 0.39% of those graduating from HEIs – are well below the levels in highly competitive countries and should be increased. However, postgraduate provision has yet to be restructured into fewer broader specialisms and the shorter PhD courses envisaged by the Bologna process. When this happens, from 2008, postgraduate study may become more attractive and popular.

The team was also asked to give a view on the **number of higher education institutions (HEIs) in the system**. The team found that Kazakhstan higher education institutions vary considerably, in size/viability, quality of facilities and support services, expectations of students, quality of management and tolerance of corruption. There is no compelling evidence that the numbers of institutions in the higher education sector at present is excessive, or that private institutions perform worse than public, allowing for differences in intakes and financing. However, future falls in student numbers will put pressure on the smaller, weaker HEIs and some rationalisation at that stage seems inevitable. It would be best, the team suggests, to achieve this rationalisation by a combination of quality thresholds, greater transparency and market forces.

Another question the government raised was whether the team thought there would be merit in designating some **"elite" universities**. That depends on the aim to be achieved. If the purpose is to raise quality standards, it

would be best to raise these for all HEIs through the accreditation mechanism, and avoid creating a two tier system. If the purpose is to develop world class universities in Kazakhstan, elite status for a few may do this, but the team points out a number of other requirements and suggests selecting the "elite" on a fair and competitive basis.

Even though the principle of a single national university entry test is right, the team identified problems with the present Unified National Test (UNT), which also serves as a school-leaving certificate. With its limited number of multiple-choice questions, it does not enable students to demonstrate all that they have learnt at school, or give them a recognised qualification for labour market or international higher education entry. It does not keep **admission standards** constant or comparable from year to year; and it raises equity and security issues. The introduction of the 12th year is the chance for reform.

The team was asked for a view on the **quality of higher education curricula** and the **standards achieved on graduation** in Kazakhstan. The standards achieved by graduates from the country's universities are hard to assess in the absence of any international comparison evidence. Graduation standards appear respectable, but need to be better than that if Kazakhstan is to join the world's 50 most competitive countries. The review team felt that the system for contracting out preparation of new State Educational Standards and curricula to a university already providing the subject is unsatisfactory. Universities that bid have every reason to bid on the basis of what they already do, and no incentive to innovate, incorporate international standards, or take account of the needs of other stakeholders, such as employers.

In general, compared to best international practice, **relationships between higher education and employers** are very limited, with adverse consequences for the economy. Employers in Kazakhstan are not routinely involved in identifying needs for skilled manpower that the universities might meet, or in standard setting, curriculum design and quality assurance. The result is that the output of the tertiary education system is unlikely to meet the needs of industry; and Kazakhstan employers do very little training at tertiary level themselves. Statistics suggesting that graduates almost all find suitable employment are unreliable.

The review team has analysed the available statistical evidence in some depth to see whether Kazakhstan's current arrangements ensure **equitable access to higher education,** as intended when the UNT and student grant system was introduced. There seem to be a number of issues. The higher education entry system is still somewhat vulnerable to corruption. Deficiencies in the UNT as a test can lead to unfairness at individual level.

Because it is a test of knowledge rather than ability, pupils of equal ability who have attended less good schools are at a disadvantage. Consequently, children from poor rural areas appear to have lower chances of getting to university and qualifying for grants, despite quotas giving them preference for a third of places. Access for these children may also be limited by lack of transport and accommodation.

The team also looked carefully at **resources for higher education,** finding that, by international standards, public spending on all education remains low in Kazakhstan in spite of rapidly growing oil and gas revenues. While government funding for tertiary education has increased significantly, it has not kept pace with the growth in student numbers. Much of the increase in tertiary education coverage since independence has been financed through a rapidly growing private sector funded essentially by the students and their families.

The voucher-like system of education grants that students carry with them to the public or private institution of their choice is innovative, but has the drawback of pursuing several not entirely compatible objectives at the same time: facilitation of competition among all tertiary education institutions, encouragement of priority fields of study, and financial support to students, particularly the disadvantaged. As a result, none of the objectives is fully achieved. The new commercial student loan scheme, established with a partial government guarantee against default, should achieve better financial viability than the previous, state funded system. But it does not seem to be affordable enough to meet the financing needs of low income students.

Funding for university research has also remained very low. Most of the research funding is allocated through direct subsidies, with no performance based criteria.

Government regulations provide very little incentive and flexibility for public tertiary education institutions to use resources in the most efficient and effective manner. And there seems to be insufficient financial overseeing of private tertiary education institutions.

The **higher education quality assurance** system in Kazakhstan is moving from quality control to quality improvement, but not – in the team's view – fast enough. While control can be a useful tool for ensuring that graduates from weak institutions reach a minimum standard, it cannot help strong institutions to improve and excel. There are too many quality control and quality assessment bodies in Kazakhstan, all attached to the Ministry of Education and Science. Of these, the National Accreditation Centre is well placed to introduce best international quality assurance practice, but will be more effective if allowed independence from the ministry. Through the

accreditation process, higher education institutions in Kazakhstan, which are used to a highly regulated compliance culture, can evolve into self-evaluating, self-improving, self-confident organisations able to decide on academic matters for themselves.

It is difficult, on the evidence available to the team, to give an overall view on the **quality of teaching and learning** in Kazakh universities. It is, however, possible to comment on particular aspects of quality, many of which need improvement.

The quality of teachers and teaching is at risk from low pay, low status and limited support for in-service training. Many teachers are driven to working at more than one institution, a few to taking bribes. A class contact workload much higher than in developed countries also reduces time to catch up on developments in their subject and undertake research. Innovative teaching is not encouraged or rewarded.

The quality of the student experience is at risk from the teacher issues above, as well as from poor learning environments, old and outdated equipment, and inadequate access to textbooks and the Internet.

The review team was also asked to comment on the **quality of higher education governance and management** in Kazakhstan. It is difficult to reach a fair view on a whole system from a short visits programme, but worth noting that higher education institutions in Kazakhstan have far less developed concepts of governance and management than HEIs in competitor economies, mainly because limited autonomy gives them less to govern and manage. There has been some decentralisation of financial authority to public HEIs, and private HEIs of course have this already; but decentralisation of academic, legislative and administrative autonomy has lagged behind. By contrast with leading competitor countries, public HEIs in Kazakhstan do not own their own land and buildings, cannot borrow funds, are constrained in spending budgets to achieve objectives, have to follow state standards, rather than devising their own course curricula, and cannot decide the level of staff salaries or how many students to enrol.

The review team notes that universities are the bastion of knowledge. They are better qualified than any other agency to decide what to teach, how to teach, and when to award a degree. The team suggests that universities that have gained accreditation should be trusted to exercise full autonomy in these academic matters.

The team observes that if Kazakhstan wants to become a more competitive nation, the **internationalisation** of higher education is important. This involves embedding the international dimension in all aspects of teaching and research, at both national policy and institutional

levels. It means, among other things, effectively equipping graduates with all the skills, knowledge and competences required in the global economy; conducting internationally competitive research; using international experience and international providers to help increase the quality of higher education in Kazakhstan; and attracting international students and professors.

Commendable steps already taken include setting up the Bolashak Programme, and adopting both the Bologna process and preparing to adopt the Lisbon Convention on the mutual recognition of qualifications concerning higher education. However, internationalisation at HEI level is limited and uneven; centrally developed academic curricula take too little account of international standards and developments; and very low numbers of students are being imported and exported.

The review team's assessment of the **research** dimension of higher education in Kazakhstan broadly agrees with the strengths and weaknesses identified in the country's own strategic documents, though is less optimistic. Research and development in the country are seriously under-funded by international standards, and the traditional ex-Soviet bifurcation between research institutes and HEIs has meant the HEIs getting a relatively small share of an already small cake. The legal framework does not support reform or encourage innovation – for example, it does not recognise HEIs as state research organisations, does not incentivise collaboration with industry to commercialise scientific discoveries, and gives the state the intellectual property rights over those discoveries. The grant system of financing research is heavily government regulated and somewhat inflexible.

Other problems include a badly eroded material base and poor equipment for scientific research in HEIs. Information resources and IT infrastructure are also inadequate. Numbers of researchers are relatively low, few young researchers remain in the sector and there are too few technicians. Meanwhile, the research capacity of university teachers is limited by heavy teaching loads. The number of publications by Kazakhstan scientists in international journals is very low by international standards, though increasing.

Overall, the team's conclusion is that Kazakhstan's tertiary education system has some strengths, but a greater number of weaknesses, which – unless tackled – will inhibit the country's pursuit of higher competitiveness and full development of its human capital. One general weakness is that, often, statistical evidence the team hoped to find was not available, or not in a form allowing secure conclusions or international comparisons. It is very important to improve this statistical evidence base. Educational leaders and policy makers need full and reliable information to understand what is

happening in the tertiary education system, evaluate how well it meets the needs of students, employers and the economy, and steer it effectively into the future.

Recommendations

The recommendations that follow are divided into sections, according to the main themes in earlier chapters.

System structure and labour market relevance (Chapter 2)

- Rationalisation of the higher education sector, when necessary, should be achieved by improving quality assurance, so that only deserving and well managed universities remain, and then allowing well informed students to choose the institutions likely to give them the best deal.
- Fuller, more objective, independent information and guidance should be provided during secondary education to help students make sensible further education and employment choices. Schools should deliver this with input from employers.
- A national curriculum should be developed for the 12th year that will equip school leavers in Kazakhstan with subject knowledge and skills comparable to those of 18-year-old school leavers in European countries.
- A new school leaving exam should be developed that enables school leavers to demonstrate the standards of knowledge and skills they have acquired.
- To meet employer demand for graduates with lower tertiary vocational qualifications, college provision should be expanded and new higher technical schools created.
- A number of other steps should be taken to boost the status and attractiveness of college tertiary vocational education, including making colleges part of the higher education system.
- To ensure that Kazakh qualifications at and above the level of the new school-leaving certificate are internationally recognised, and form a "ladder of qualifications" with clear progression routes up the ladder, a National Qualifications Framework should be developed, reflecting national circumstances, but capable of

mapping onto the recently adopted European Qualifications Framework.

- To enhance responsiveness to labour market needs, universities that are licensed and have passed institutional quality accreditation should be free to decide, without seeking MOES' permission, what subjects/courses to offer, how many places to offer in each, and what syllabuses to teach, provided they have consulted the relevant employers, who agree on the need for the courses and will help design and quality assure them. Universities should be free to withdraw or modify courses if employer or student demand dries up.
- Close relationships with and involvement of employers should be one of the criteria for institutional accreditation.
- An independent statistical system should be used to establish graduates' success in finding employment.
- To enhance transparency, accredited universities should also be free to award their own degrees/diploma certificates. Those licensed, but not yet accredited, could have diplomas issued either by the MOES, or by an accredited institution prepared to quality assure and vouch for them.
- Accredited universities, whether public or private, offering courses to meet employer endorsed labour market needs should have access to the necessary funding, including for up to date equipment and facilities. If private sources or sponsorship cannot be found, the state should make funds available.

Access and equity (Chapter 3)

To improve the independence, quality and security of the single unified higher education entry test:

- In the immediate future, until introduction of the 12th year of schooling requires the reform of the present UNT, measures should be taken to ensure that the UNT is above corruption, and that its security is not compromised. This should improve opportunities for young people and their families and build public confidence in the education system.
- In the medium term, the new school leaving qualification recommended in Chapter 2 should set the threshold for higher education entry; but to address access and equity issues,

demonstrate learning potential and allow for finer distinctions between the pupils able enough to be eligible for higher education, the main basis for decisions on admission to particular institutions should be either a common national test of reasoning and learning potential similar to the SATs used in the United States, or an additional General Aptitude Test as in Georgia. This should be developed with international experts.

- It is not recommended to return to the system whereby each university designed and administered its own admission procedures.

To assure equity of access and better quality of education for the less well off and for children in remote rural areas:

- Incentives should be developed to attract better educated and highly motivated teachers to remote areas, including those who can teach higher grades to the depth needed to enter and succeed at university.
- Provision of fast and reliable Internet access to all higher education institutions and their students should be reviewed and accelerated. Meanwhile, Kazakhstan could borrow from the experience of Russia in developing new generation learning and teacher training materials for delivery using ICT.
- Better career information and guidance should be provided during secondary education, as also recommended in Chapter 2. This would greatly improve the situation of pupils whose family backgrounds or geographical location make it difficult for them to make informed choices about their educational or labour market opportunities.
- Individual universities should be encouraged to earmark more grants for disadvantaged students in their areas.
- Mobility and flexibility should be encouraged by providing opportunities for students to change focus within their chosen discipline or to change institutions where appropriate.
- The urban/rural access issue should be more fully explored through household surveys of incomes and living standards. If it is established that rural and poor children, especially from the poorer oblasts, are indeed at a disadvantage, special programmes could then be designed to target this group further, including remedial or UNT preparation courses.
- The experience of Finland and Korea – countries that have scored highly in OECD PISA assessments and manage to combine

excellent academic results with equitable treatment for all – should be studied to find lessons for Kazakhstan.

Financing (Chapter 4)

Resource mobilisation

- Kazakhstan needs to raise the proportion of public spending for education in GDP.
- To maximise the efficiency and equity impact of the voucher system, it would be desirable to increase the tertiary education budget, thereby reaching a greater share of the total student population. At least 20% of the national budget would be reasonable for the education budget, and within this, tertiary education could receive at least 15%.
- Funding for research needs also to increase. Most research funding should be allocated to research teams and projects on a competitive basis, with independent peer reviewing of research proposals.

Resource allocation

- It would be advisable to separate clearly the voucher and scholarship elements of the education grant, by establishing a distinct scholarship fund to attract students into study programmes of high national or regional priority.

Resource utilisation

- Public tertiary education institutions should be allowed to operate under the same financial management rules as private institutions, including receiving the amount corresponding to the education grants and other government subsidies in the form of a block grant that can be used flexibly within the context of sound financial management practices.
- Taxation regulations should be equal for all tertiary education institutions.
- All tertiary education institutions should manage their resources according to standard and transparent accounting practices, and prepare annual financial reports that would be audited independently.

Equity considerations

- There is a need to introduce provisions (collateral waiver, interest rate subsidy, etc.) to address the issue of affordability of the new commercial student loan scheme for the neediest students.
- The government of Kazakhstan may also want to consider setting up an income contingent student loan system. This could be more efficient and equitable than the new commercial scheme.
- In order to ensure an equitable distribution of public resources at the tertiary education level, it is essential to put in place a reliable management information system to collect information on key personal and social characteristics of students (socio-economic origin, gender, rural/urban origin, ethnic origin, etc.) that would be used to analyse the benefits incidence of public spending and guide corrective policy measures

Improving quality (Chapter 5)

- The government of Kazakhstan should take steps to decentralise existing quality control mechanisms and move towards a stakeholder based quality assurance culture.
- These steps should include phasing out the classifier of higher education courses and State Standards, and allowing individual HEIs to decide on the courses they will offer, and the contents and curricula for those courses, provided they have proved their competence to take those decisions by passing institutional accreditation.
- International experience suggests that, instead of the MOES or government agencies controlling quality, it is more effective to entrust quality assurance to an independent accrediting agency or agencies with the direct involvement of professional associations and/or employers. The National Accreditation Centre should become an independent agency responsible for accrediting HEIs that have met the criteria (institutional accreditation).
- The government's role should become the strategic management and quality control of that independent agency.
- To minimise overlap and burdens on institutions, attestation should be phased out as unnecessary once institutional accreditation is established, and the remaining quality assurance mechanisms

reviewed to rectify real and perceived duplication and avoid conflicting roles and goals.

- A sound institutional accountability and self-evaluation culture and process should be developed in higher education institutions, including new tools for institutional self-assessment which focus on outcomes and competences achieved, rather than inputs and processes. The government should provide incentives to encourage institutions.

- It is also important to further develop an independent capacity to gather, analyse and report data on the performance of higher education in Kazakhstan; to encourage the use of this information in the development of public policy and institutional decision making processes; and to report on the performance of HEIs and the higher education system through the media, the Internet and other means widely available to the public. The National Centre for Educational Quality Assessment, which does this job for the education system as a whole, should be made independent of the MOES. If the Centre does not have enough capacity to evaluate higher education in the necessary depth, a new independent body with that specific role should be set up

- The review (recommended above) of remaining quality control mechanisms should look critically at whether standard national tests continue to be needed: at the end of the second year (which will, after introduction of the 12th year of schooling, become the first year) and at the end of degree courses. National tests are inconsistent with allowing accredited HEIs to decide course content and syllabuses for themselves, and could be inconsistent with the course outcomes sought by international or regional employers.

- To improve teaching and learning quality further, steps should be taken to ensure that academic staff should have fewer mandatory hours, are not overburdened with administrative compliance checking reports, have more time to prepare course materials and update their knowledge, and have more funded opportunities for professional development.

Governance and Management (Chapter 6)

- All HEIs that gain accreditation should be entitled to academic autonomy, and allowed to make their own decisions on introducing new undergraduate and postgraduate courses, on course content, on

examinations, graduation standards and certain changes to entry standards.

- To improve HEI governance and bring Kazakhstan in line with best practice in developed countries, all HEIs should be required to set up governing boards with majority external representation, in addition to their scientific or academic councils; and the governing boards should appoint rectors.
- All HEIs should have the right to determine academic pay and conditions, manage their own budgets and introduce income generating ventures.
- The MOES' role in the management of HEIs, and controls over them, should be reduced to the minimum possible level.

Internationalisation (Chapter 7)

Curriculum

- Higher education institutions in Kazakhstan need to place more emphasis on preparing globally minded, locally responsible, and internationally competitive students. The development of competences required by the knowledge economy should be given high priority by the government, the higher education institutions and by employers.
- Academic staff of HEIs should have training and incentives to encourage them to find out about international developments in their subjects and to introduce international elements into their curricula.
- Participation in the Bologna process should be seen as a unique opportunity to learn about the content of other countries' higher education courses, and adapt courses in Kazakhstan HEIs to include international elements.
- In addition, when curricula are updated, the opportunity should be taken to include an international dimension when appropriate.

Second language

- Kazakhstan needs to raise English language competence among its higher education graduates. This should be done in addition to the current programmes aimed at providing language competencies in Russian and Kazakh. An internationally functional command of a

second and third language should be emphasised, beginning in earlier levels of education so that only reinforcement is necessary at the higher education level.

Student and academic staff mobility

- Kazakhstan could benefit by dramatically increasing the international mobility of students and academic staff. More outgoing and incoming students and professors could be highly instrumental in the internationalisation of HEIs, and would, in the long run, contribute to the improved competitiveness of the country.
- It is advisable to increase funding for student and academic staff mobility, including the development of cost recovery mechanisms and the implementation of partnerships with employers and interested international organisations.
- It is highly recommended to increase the number of international students and academic staff in higher education institutions in Kazakhstan. This requires more international dissemination of information about HEIs' capabilities and offerings, as well as more reciprocal agreements, more matching funding programmes, more initiatives to support the hosting of top level professors and researchers from abroad and further development of HEIs' administrative capacity to support international activity.

The Bolashak Programme

- It is recommended that the Bolashak Scholarship Programme be enlarged and improved to maximise the efficiency of use of these limited resources, further linking the programme to national and institutional priorities, and developing a mechanism to attract and provide appropriate opportunities to returning graduates.
- As regards the scope of support, more emphasis could be placed on graduate programmes than on undergraduate programmes.

Building capacity

- It is critical that Kazakhstan builds capacity at the system level to better address the need for internationalisation of higher education. The following specific steps are suggested:

- A national clearinghouse for international higher education opportunities should be established, in order to foster the exchange and dissemination of information and to help institutions identify and develop international partnerships targeting the country's strategic priorities in terms of areas of knowledge and regions. The current Centre for International Programs (CIP) could be well positioned to take on this role.
- A national association or inter-institutional committee composed of international education officers should be created to share experiences, engage in professional development activities and further the development of international education as a profession.
- Kazakhstan higher education should be more actively and visibly represented in relevant international fora, international higher education organisations and at international higher education fairs.
- International collaborative partnerships among institutions should be fostered in order to offer high quality joint degree programmes targeting geographic and economic areas important to the country.
- An open and transparent incentive programme should be established to provide encouragement and support for internationalisation activities at institutions.

International higher education providers

- A quality control mechanism should be established and enforced, to ensure that programmes offered by international providers of higher education are of appropriate quality and that foreign providers have to meet the same standards and conditions as national providers, in practice as well as in law.
- The UNESCO/OECD "Guidelines for Quality Provision in Cross-border Higher Education" should be implemented (UNESCO, 2005a).

Research (Chapter 8)

At the national level

- To achieve the goal of increasing the funding of research and technological development in Kazakhstan to 2% of GDP by the year 2012, while ensuring that the money is used cost effectively and that a fair share of the increase goes to HEIs, an implementation advisory group should be set up, with HEI representatives and international input, to advise the government.
- HEIs should be more involved in the development of science and innovation policy, including through participation in bodies advising government. This will help to strengthen research in universities, integrate research and teaching, and link research, innovation and educational policies.
- Special funding mechanisms should be introduced, to improve the material base, information resources and integration of research and teaching in HEIs. We recommend a new Fund to grant financing on a competitive basis for projects in government priority areas.
- A new competitive Fund is recommended to support development of the research potential of the HEIs. This Fund would provide mechanisms for financing the activities of research teams.
- There should also be a new competitive funding mechanism to stimulate three-party collaboration between HEIs, research institutions and enterprises, and support the transfer of technologies and the commercialisation of research products.
- Laws and regulations should be changed to reduce the current very high teaching load required of academic staff, and give them more time for research.
- Mobility schemes should be developed to improve the quality, relevance and international orientation of research in HEIs. The schemes would be for both research students and academic staff. They might take the form of industrial internships for Master and PhD students, exchange of personnel between companies and HEIs, consulting services to local companies from HEI staff, and international exchanges.
- To encourage individual researchers from all sectors to participate in applied research, technology transfer and the development of new products, their share in the profits from realised new products

should be substantially increased and any legal obstacles to this removed.

- To facilitate the commercialisation of research products, HEIs should be granted the right to establish spin-off companies. These companies will bring together HEIs, individual researchers and private capital in the development of new products.
- The Committee for Supervision and Attestation should revise its requirements for higher scientific degrees and academic titles, to give more weight to the publication of scientific papers in reputed international journals.
- The Bolashak Scholarship Programme should offer more of its places to science and technology students (including those studying for higher degrees) in areas identified as national priorities, including nuclear studies, space research and technology, biotechnology, nanotechnology, and oil and gas technologies.

At institutional level

- HEIs should take account of research output, quality and publications in reputed international journals, when deciding which academic staff to promote.
- HEIs should encourage their academic staff to participate in national and international competitions for research grants. Most of the funding should go to the research teams.
- The Technoparks should extend their functions and offer services to researchers that would facilitate the transfer of technologies and commercialisation of research products.
- In order to reduce the teaching load of the academic staff without increasing costs, HEIs may wish to introduce a modular structure of course delivery.
- HEIs should make it a priority to dramatically improve information resources for both academic staff and students. They should subscribe to the most important Internet based information resources – databases such as IST Web of Knowledge and Scopus – as well as electronic versions of the leading journals in the different fields of knowledge. They should ensure that there are enough computers, with fast Internet access, to meet the study and research needs of all staff and students.

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Reviews of National Policies for Education

Higher Education in Kazakhstan

Reform of education, training and human resource development is an integral part of the transition to a democratic society and a market economy. Kazakhstan has made progress in all these areas since reform began in 1990 and aims to become one of the world's 50 most competitive economies by 2012. The challenge for the Ministry of Education and Science has been to promote and support changes that meet the needs of both the new economy and society and the interests of all young people and adults, in the face of a shortage of financial and human resources.

This book gives a brief overview of regional issues and the history of post-secondary education in Kazakhstan and describes the development of higher and tertiary education in the country since the transition began. It presents an analysis of the education system, identifying key directions for the reinforcement of the reforms in light of the challenges encountered by officials, communities, enterprises, educators, parents and students under very dynamic conditions. It concludes with a set of key recommendations concerning the structure of the system and its labour market relevance; access and equity; financing; governance and management; internationalisation; and research, development and innovation. This review will be very useful for both Kazakh professionals and their international counterparts.

This review is part of the OECD's ongoing co-operation with non-member economies around the world.

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