

# **Uzbekistan**

## **Modernizing Tertiary Education**

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## ACRONYMS AND ABBREVIATIONS

<b>CER</b>	<b>Center for Economic Research</b>
<b>CIS</b>	<b>Commonwealth of Independent States</b>
<b>ECA</b>	<b>Europe and Central Asia</b>
<b>ECTS</b>	<b>European Credit Transfer and Accumulation System</b>
<b>EHEA</b>	<b>European Higher Education Area</b>
<b>EQAR</b>	<b>European Quality Assurance Register</b>
<b>GDP</b>	<b>Gross Domestic Product</b>
<b>GII</b>	<b>Global Innovation Index</b>
<b>GNI</b>	<b>Gross National Income</b>
<b>GoU</b>	<b>Government of Uzbekistan</b>
<b>HE</b>	<b>Higher Education</b>
<b>HEI</b>	<b>Higher Education Institution</b>
<b>HEMIS</b>	<b>Higher Education Management Information System</b>
<b>MHSSE</b>	<b>Ministry of Higher and Secondary Specialized</b>
<b>Education</b>	
<b>MLSP</b>	<b>Ministry Labor and Social Protection</b>
<b>MOOCs</b>	<b>Massive Open Online Courses</b>
<b>OECD</b>	<b>Organization for Economic Cooperation and</b>
	<b>Development</b>
<b>QA</b>	<b>Quality Assurance</b>
<b>QAA</b>	<b>Quality Assurance Agency</b>
<b>QECs</b>	<b>Quality Enhancement Cells</b>
<b>SES</b>	<b>State Educational Standards</b>
<b>SET</b>	<b>Science, Engineering, and Technology</b>
<b>SSE</b>	<b>Specialized Secondary Education</b>
<b>STC</b>	<b>State Testing Centre</b>
<b>TE</b>	<b>Tertiary Education</b>
<b>TVET</b>	<b>Technical and Vocational Education and Training</b>
<b>UNDP</b>	<b>United Nations Development Program</b>

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## Executive Summary

1. **Uzbekistan is a lower middle-income country located in Central Asia with a population of 30 million<sup>1</sup> people and an economy that has been growing by over 8 percent per annum since the mid-2000s.** Along with high growth rates, GNI per capita has increased from USD 630 in 2000 to US\$1720 in 2012. As of 2012, Uzbekistan's economy was comprised primarily of services (45 percent), followed by industry at 35 percent, and lastly, agriculture at 20 percent. Over the last 20 years, the composition of trade has transitioned away from agriculture: cotton fiber has decreased from 65 to 9 percent of exports, and energy has increased from 4 percent to 38 percent of exports. In addition, food accounted for just 9 percent of imports in 2012 compared with 43 percent in 1992, while machinery and equipment imports increased from 10 percent to 46 percent of imports over the same period.

2. **The composition of the workforce has also changed dramatically in recent years.** The agricultural sector, accounting for as many as 40 percent of all jobs in the 1990s, now employs only one in four workers. By contrast, the service sector plays a leading role in the Uzbek economy, employing over 50 percent of the labor force and accounting for 45 percent of the country's GDP. Nearly 80 percent of all newly created jobs in Uzbekistan are now in the service sector. Uzbekistan's economy is undergoing a profound transformation, which will necessitate the development of a highly skilled workforce who will use their entrepreneurial talent to increase the competitiveness of the economy and spur growth. Is the education and training sector ready to produce a skilled workforce for a rapidly growing economy faced with the 21st century challenges?

3. **The higher education system is characterized by low access and concerns about the quality and relevance of the skills of its graduates.** Tertiary enrolment, at around 9 percent, is low by regional and international standards, and contrasts with nearly universal enrolment in primary and secondary levels in Uzbekistan. Central planning influences both the number of students in higher education Institutions (HEIs) as well as their course of studies. Government decrees determine the allocation of spaces for higher education by topic of study, and students are selected into higher education based on their results on a national entry test conducted by the State Testing Center under the Cabinet of Ministers. With enrolment rates above 80 percent,

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<sup>1</sup> As of January 1, 2013

and tertiary enrolment at 9 percent, it follows that 9 out of every 10 secondary school graduates cannot enter university, even though demand is high and there are over 6 applications for every university place on offer. Of those that make it into university, at least 60 percent of higher education students are male (with female share of university spaces declining in recent years, unlike elsewhere in the region).

4. **A recent regional skills study<sup>2</sup> concluded that Uzbekistan is experiencing a substantial shortage of university graduates.** At the same time, the country has a surplus of workers who possess only basic skills (those who have completed general secondary education or less). A survey of Uzbek employers in 2008 revealed that 73 percent of the firms surveyed point to inadequate skills and education of the country’s workers as an obstacle to doing business in Uzbekistan—up from 60 percent in 2005. More than one-third of the firms (35 percent) said that employee skills posed a “major” or “very severe” obstacle to growth.<sup>3</sup> In the same survey, Uzbek employers rated the “skills and education of workers” as the second biggest obstacle to doing business in 2008. More specifically, in a survey conducted for this report in 2013, employers in industrial enterprises report low levels of satisfaction with university graduates. Nearly half (49 percent) of industrial firms report difficulties in hiring sufficient numbers of qualified specialists with higher education and only a third (33 percent) saying that graduates’ skills are better than they were a decade ago (compared to 36 percent saying that they are worse). It is worth noting that higher education graduates are often employed outside of their area of study (e.g. only 57 percent of graduates in education get a job in their sector, while three-quarter of all graduate level jobs in the construction industry are filled by graduates from other disciplines). Low enrolment and a weak relationship between employers and industry and universities also hamper the economy’s capacity for innovation, technology adoption and value creation. Clearly there is much that can be done to better prepare universities to respond to the needs of an evolving economy, and reduce the mismatch between the supply and demand of graduates.

5. **The internal management of the higher education system is fragmented, with different actors having overlapping responsibilities<sup>4</sup>,**

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<sup>2</sup> Sondergaard and Murthi (2012), pp. 26-30.

<sup>3</sup> World Bank (2010). By comparison, the 2008 averages for the ECA region were 67 and 31 percent respectively for skills being an obstacle or a “major”/“very severe” obstacle to doing business (versus 73 and 36 in Uzbekistan).

<sup>4</sup> For example, the President’s office has special department lead by State Advisor responsible for education policy development. Parliament has a permanent Committee for Education, which oversees education policy development and reviews implementation results. One of the Deputy

**thereby making it difficult to ensure system-wide accountability.** Currently, the Uzbek higher education system comprises 64 institutions<sup>5</sup>, including 19 universities, 37 post-secondary institutions providing bachelor and post-graduate level studies; two academies and 6 branches of foreign higher education institutions<sup>6</sup>, all of which served a total of 252,000 students during the 2011-12 academic year. As of December 2012, there were no private, non-governmental higher education institutions in Uzbekistan, though there is a legal statute (the 1997 Education Act) that allows such institutions to exist<sup>7</sup>. There is restricted autonomy within individual higher educational institutions, especially in choosing university leaders, setting fees, and determining overall enrolment as well as enrolment in each speciality. All these decisions are made centrally.

**6. In order to enable the Uzbek higher education system to serve the economy and student population well, the quality assurance system should be compliant with global best practices while remaining locally relevant.** Currently, quality assurance system in higher education is comprised of Cabinet of Ministers, responsible for establishing and reorganizing HEIs, defining licensing procedures, and approving the State Educational Standards (SES) as well as the quality assurance procedures and outcomes for HEIs and their programs; and the State Testing Center (STC), which reports to the Cabinet of Ministers, is responsible for organizing and

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Prime Ministers is responsible for overseeing education development issues, while the Cabinet of Ministers has a specific department (Social Complex) that is responsible for the immediate oversight of education, health, and social development and in particular higher education development issues. The Cabinet of Ministers provides high-level guidance to the department and approves the State Education Standards (SES). The Ministries of Economy and Labor are tasked with ensuring an adequate supply of graduates for the labor market, and their estimates form the basis of admissions quotas set by the Cabinet of Ministers. The Ministry of Higher and Specialized Secondary Education governs the HEIs and mediates between them and other ministries such as the Ministry of Finance, which is tasked with managing the public financing for HEIs, and the Academy of Sciences, which is tasked with providing policy advice on higher education sector research. Finally, the HEIs are tasked with complying with SES and with internal administration.

<sup>5</sup> Source – official website of MHSSE: [http://new.edu.uz/tashkent\\_list/higher-education-institutions/](http://new.edu.uz/tashkent_list/higher-education-institutions/)

Additionally 11 branches of Uzbekistan HEIs are operating in Uzbekistan

<sup>6</sup> 1. Tashkent Branch of Moscow State University

2. Tashkent Branch of Russian University of Economics named after G.V. Plekhanov

3. Tashkent Branch of Turin Polytechnical University

4. Westminster International University in Tashkent

5. Tashkent Branch of Management Development Institute of Singapore

6. Tashkent Branch of Russian State Institute of Oil and Gas named after Gubkin

<sup>7</sup> The six branch campuses of foreign universities exist in partnerships with public institutions.

conducting state accreditation of all educational establishments in the country once in every five years. The third key institution is the Ministry of Higher and Secondary Specialized Education (MHSSE), which is responsible for regulating student assessment. Finally, each HEI is responsible for its own internal quality assurance. The overall system can be improved by strengthening its linkages with international academia, through external assessment under an expanded role for the STC and individual HEIs can strengthen internal quality assurance processes by knowledge exchange and partnership with international quality assurance bodies.

7. **Finally, while reported overall state budget spending on education, at around 8 percent of GDP, is one of the highest in the world, the share of this spending on tertiary education, at around 0.4 percent of GDP, is one the lowest.** Most comparator countries spend around 20 percent of their education budget on tertiary education, and some like Malaysia spend as much as third of the total education budget on tertiary education. In addition to this, the spending patterns within tertiary education are misaligned. Teacher salaries are low by international standards (starting at USD 365 per month), while generous student stipends (up to USD 130 per month) are nearly universal. This pattern is out of line with international practices and is not conducive to good system governance.

8. **In summary, Uzbekistan’s higher education system needs to modernize to better adapt to needs of the country’s economy.** The growing national economy increasingly requires highly skilled workers, but has low tertiary enrolment rates with concerns about the quality and relevance of graduate skills being produced in the sector. Clearly, the successful expansion of access to high-quality, market-relevant higher education in the country could provide the economy with more highly skilled graduates and greater innovation capacity, thereby catalyzing economic growth. The report, having analyzed the sector in detail, proposes the following measures to modernize the higher education sector:

- a. Develop and approve a comprehensive medium term tertiary education strategy
- b. Expand equitable access overall, allow greater autonomy to individual universities in enrolling students in line with market demand, experiment with innovate models of providing online higher education, and facilitate the entry of private education providers.
- c. Improve system governance by choosing rectors and university leaders in a transparent and open search process, and develop and

deploy a modern Higher Education Management Information System (HEMIS).

- d. Modernize quality assurance by strengthening the STC to perform the role of an independent Quality Assurance agency, establish and empower Quality Enhancement Cells in all HEIs, and strengthen international linkages with academia.
- e. Reform the financing of higher education, by rationalizing stipends, increasing teacher salaries and linking it to performance.
- f. Improve market linkages through regular market surveys of labor demand linked to the HEMIS, foster partnerships with domestic and foreign industry, and modernize laboratories relevant to priority technical fields.

## **CHAPTER 1: INTRODUCTION - WHY DOES TERTIARY EDUCATION MATTER FOR UZBEKISTAN?**

### **A. Country and Sector Context**

1. **Uzbekistan is a lower middle-income country located in Central Asia with a population of 30 million people and has an economy that has been growing by over 8 percent per annum since the mid-2000s.** With a growing young population—30 percent of all Uzbeks are under the age of 15—the Government of Uzbekistan (GoU) is keen to increase access to and improve the quality and equity of basic public services, including education, to ensure a smooth and gradual transition to a market-oriented economy across the entire country.

2. **In order to become a high-middle-income country, Uzbekistan needs to transform its current commodity-dependent economy into a competitive industrialized economy with a comparative advantage in high-value-added activities and products.** Such a transformation will necessitate the development of a highly skilled workforce who will use their entrepreneurial talent to increase the competitiveness of the economy and who can be a catalyst for modernization. The education system has evolved through three consecutive development programs. First, the National Program for Personnel Training invested in technical and vocational education and training (TVET) and upper secondary education in 1997. Second, the Basic Education Development Program (2005-2009) focused on improving primary and secondary school infrastructure. Most recently, a Presidential decree outlined the main contours of a future tertiary education strategy, which could become the focus of concerted national effort. Education's contribution to producing a qualified workforce, especially at the tertiary level, has the potential to positively influence growth if aligned with the needs of the economy in Uzbekistan.

3. **While there is nearly universal enrolment at primary and secondary levels, Uzbekistan’s tertiary enrolment rates, at less than 9 percent, are amongst the lowest in the region and the world.** In Uzbekistan, basic education (or general secondary education) covers two cycles: (i) grades 1 to 4 for children aged 7 to 10 and (ii) grades 5 to 9 for students aged 11 to 15. After general secondary education, there are three years of secondary specialized professional education for students aged 16 to 18, who can choose to attend either an academic lyceum or a vocational college. Both alternatives can lead students to higher education (Bachelor and Master degrees) and subsequent postgraduate courses and doctoral degrees. Gross enrolment rates are high at lower levels; in 2011, enrolment at the general secondary level was 91.3 percent and at the secondary specialized professional education level it was 86.2 percent.<sup>8</sup> However, enrolment decreases sharply at the tertiary level, with gross enrolment at this level being only 8.9 percent in the same year.<sup>9</sup> Many youth stop their education after the secondary specialized level for a variety of reasons including higher fees and limited spaces which generate high selectivity at the tertiary level. In addition, while this is not the focus of this study, it bears noting that vocational college graduates can only get higher education in universities, as there are no vocational streams for education beyond grade 12. In more diversified systems, such as the USA, two-year community colleges offer vocational graduates the opportunity to specialize in their field without having to necessarily move the academic stream in universities.

4. **In addition to low enrolment, the higher education system is characterized by concerns about its quality and relevance of the skills of its graduates.** There are a total of 64 higher education institutions in Uzbekistan, which are comprised primarily of post-secondary institutions but also of several universities and just two research academies. Of the 64 HEIs, 58 are Uzbek and 6 are public-private partnerships linked to foreign HEIs that account for only 1 percent of total enrolment. Although Uzbekistan’s higher education system has a long history, reforms may be necessary to make its HEIs internationally competitive as no Uzbek HEI is represented in the two best-respected global rankings of the top 500 universities. In addition, some essential academic resources are lacking: in 2011/12, only 32 percent of instructional staff in Uzbek universities held the equivalent of a PhD (either a Doctor or a Candidate of the sciences).

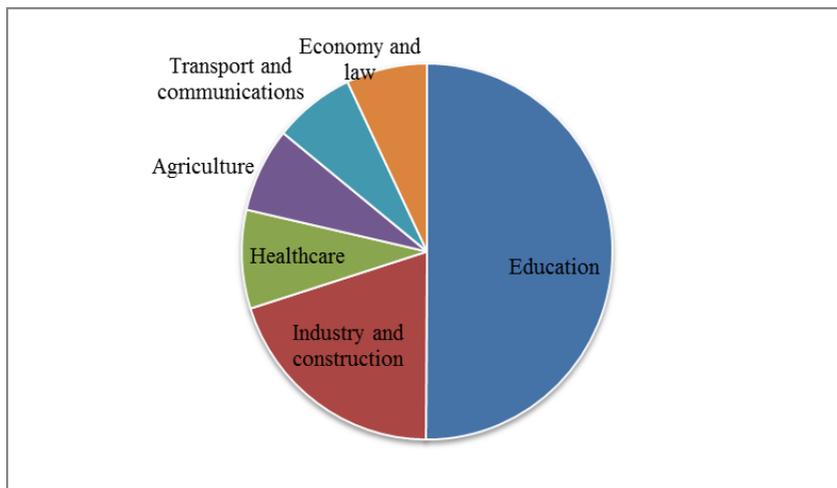
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<sup>8</sup> Education Sector Plan for the Republic of Uzbekistan

<sup>9</sup> MHSSE data; World Bank EdStats database

5. **Central planning heavily influences the number and of students in HEIs as well as the course of their studies.** Government decrees determine the allocation of spaces for higher education by topic of study, and students are selected into higher education based on their results on a national entry test conducted by the State Testing Center under the Cabinet of Ministers. Admission by exam results means that students with stronger educational backgrounds are most likely to be admitted. At least 60 percent of higher education students are male. In the 2011/12 academic year, a total of 252,000 students were enrolled in higher education. The highest share of students studied education, followed by industry and construction (see Figure 1).

**Figure 1: Shares of Tertiary Students by Topic of Study, 2011/12 academic year**



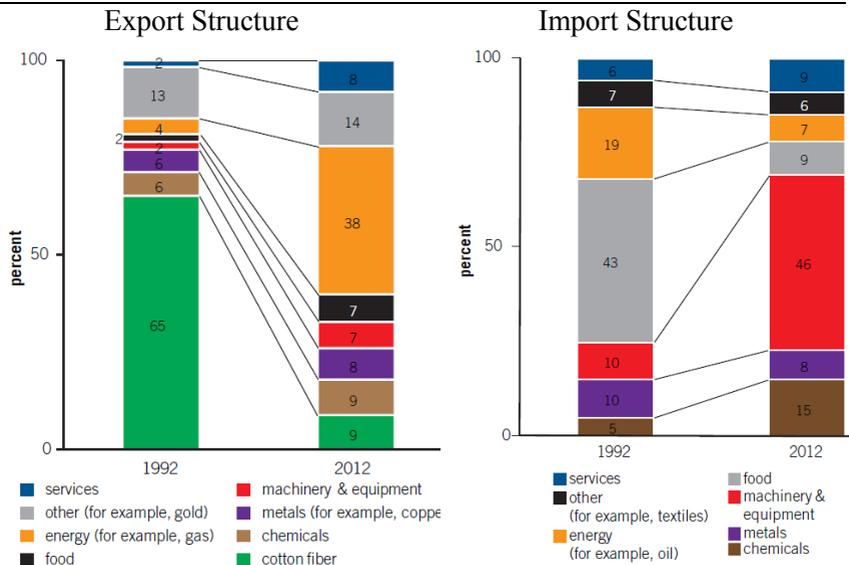
Sources: MHSSE and Ministry of Finance data

6. **The economy in Uzbekistan is changing rapidly.** Along with high growth rates, GNI per capita has increased from US\$630 in 2000 to US\$1,720 in 2012.<sup>10</sup> As of 2010, Uzbekistan’s economy was comprised primarily of services (45 percent), followed by industry at 35 percent, and lastly, agriculture at 20 percent. Over the last 20 years, the composition of trade has transitioned away from agriculture: cotton fiber has decreased from 65 to 9

<sup>10</sup> World Development Indicators. GNI per capita is expressed as current (2011) US dollars.

percent of exports, and energy has increased from 4 percent to 38 percent of exports. In addition, food accounted for just 9 percent of imports in 2012 compared with 43 percent in 1992, while the share of machinery and equipment increased from 10 percent to 46 percent over the same period (see Figure 2).

**Figure 2: Exports and Imports in Uzbekistan, 1992 and 2012**



Source: Ministry of Finance data

7. **The successful expansion of access to modern higher education in the country could have a positive impact on the wide economy in the form of more highly skilled graduates and greater innovation.** The combination of low tertiary enrolment rates and the need for highly skilled workers presents the Uzbekistan education sector with an opportunity. There is room for growth in the number of highly skilled job opportunities in Uzbekistan. The majority of the labor force (55 percent) is employed in the service sector, a trend which is likely to continue as nearly 80 percent of all new jobs are created in this sector. Demand for skilled specialists is increasing in Uzbekistan, and a recent study of labor shortages in Europe and Central Asia

(ECA) concluded that Uzbekistan is experiencing a substantial shortage of university graduates in key disciplines<sup>11</sup>.

## **B. Analytical Framework for Analyzing the Tertiary Education Sector**

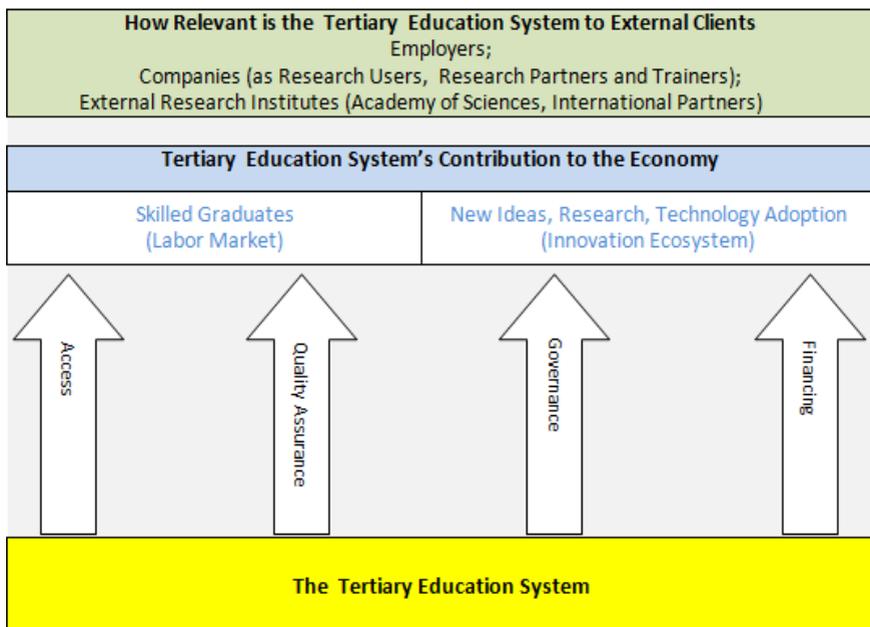
8. **An effective education system is crucial for a country's economic development.** For example, the rapid growth experienced by several East Asian countries in the last half-century followed increased investments in the education sector and the alignment of higher education provision with national economic priorities in those countries. In Uzbekistan, the Law on Education proclaims education as a priority of the state and guarantees an equal right to education for all. Primary and secondary educations are free and compulsory. To comply with the law, the GoU increased state budget expenditure on education from 5.6 percent of GDP in the mid-1990s to around 8 percent of GDP in 2012, focusing mostly on primary and secondary education where there is now very high enrolment. In contrast the tertiary education system is characterized by limited access and a reputation for being old-fashioned in a rapidly modernizing world. Given the country's ambition to vigorously modernize, industrialize, and participate in the international economy, Uzbek policymakers have recently prioritized the modernization of the tertiary education sector.

9. **The tertiary education (TE) system and the higher education institutions can spur development and growth by supplying skilled graduates and innovative, context-specific ideas and solutions for the Uzbek economy.** Therefore, in chapter 2 of this report we first examine the links between the TE system and its external clients (the users of skills and ideas), and follow up with an analysis of the internal functioning of the TE system (access, governance, quality, and financing) in chapter 3. The analytical framework that was used is summarized in Figure 3. Finally, in chapter 4, we use the analysis to identify policy options and an implementation strategy for improving and modernizing the tertiary education system in Uzbekistan.

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<sup>11</sup> Sondergaard and Murthi (2012).

**Figure 3: The Analytical Framework**



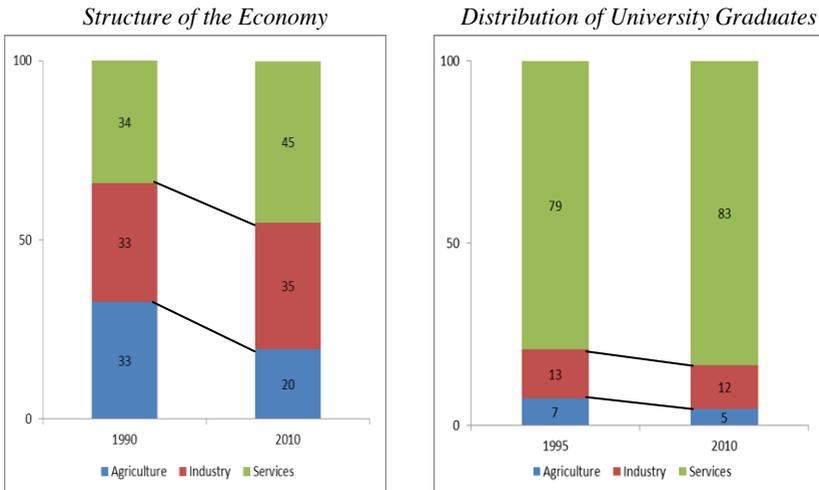
## CHAPTER 2: EXTERNAL LINKS - HOW WELL DOES THE TERTIARY EDUCATION SYSTEM CONTRIBUTE TO THE BROADER ECONOMY?

### A. Tertiary Education and the Labor Market

#### *The structure of the economy has changed in recent years*

10. The structure of the economy has changed considerably since independence. Figure 4 shows that agriculture's share in the economy has dropped from 33 percent to just under 20 percent. The manufacturing and service sector has become increasingly important. Even starker changes are apparent in the import and export structure of the economy. Yet, while the number of students graduating from universities has grown from 49,000 to around 80,000, the shares of graduates in different sectors have not changed much since independence.

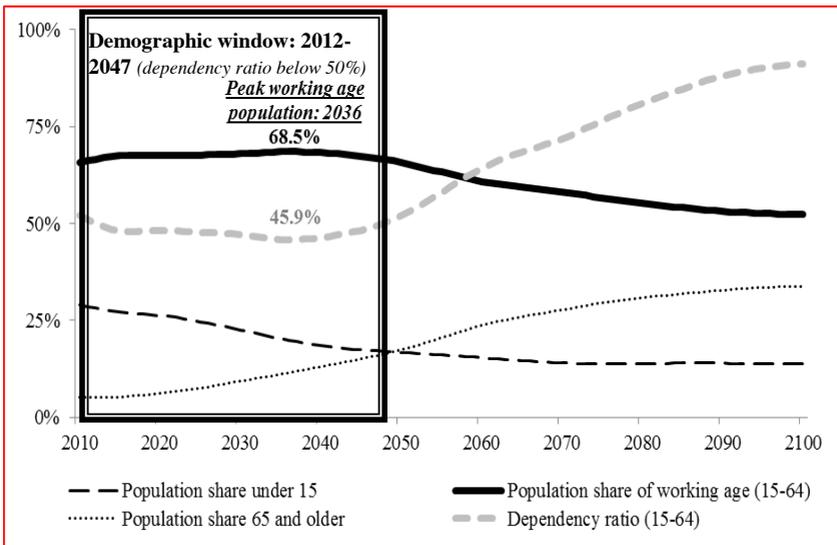
**Figure 4: The Structure of the Economy Has Changed but the Higher Education Sector Has Not**



Source: Ministry of Finance data

11. Uzbekistan’s labor force will continue to evolve in years to come. The labor force is currently composed of 11.6 million workers, corresponding to about 68 percent of the country’s working-age population. Between 2000 and 2010, 2.6 million new workers entered the labor force, while the number of working-age residents grew by 4.2 million.<sup>12</sup> Although reliable unemployment and under-employment statistics are difficult to obtain, the gap between the two figures can probably be explained by low labor force participation rates and high rates of outmigration.<sup>13</sup>

**Figure 5: Uzbekistan’s Demographic Window**



Source: World Bank staff calculations based on data from United Nations (2011)

12. The composition of the workforce has shifted dramatically in recent years. The agricultural sector, accounting for as many as 40 percent of all jobs in the 1990s, now employs only one in four workers. By contrast, the service sector plays a leading role in the Uzbek economy, employing over 50 percent of the labor force and accounting for 45 percent of the country’s GDP. Nearly 80 percent of all newly created jobs in Uzbekistan are now in the service

<sup>12</sup> Center for Economic Research (2011a)

<sup>13</sup> The current labor force participation rate of 68 percent is 12 percentage points lower than it was in 1995. Meanwhile, the number of Uzbek migrants working abroad is estimated to be between 2 and 4 million, with corresponding remittance flows contributing between 4.5 and 7 percent of Uzbekistan’s GDP in recent years (World Bank, 2011 and World Bank, 2012).

sector. This sector together with the industrial sector—which provides 13 percent of the country’s employment and 24 percent of its GDP—will dictate the future needs of the labor market for highly skilled graduates in these areas of the economy.<sup>14</sup>

13. Uzbekistan is currently entering what can become the prime period of its economic potential. During this “demographic window,” the country’s labor force will be at historically high levels compared to its population, thus allowing for a one-time leap in growth that could put the country on a path to rapid economic development. According to the United Nations’ population projections, Uzbekistan’s dependency ratio—the number of the young and the old divided by the working-age population (those between the ages of 15 and 64)—will be below 50 percent for about 35 years starting in 2012 (Figure 5). After that, the demographics of the Uzbek population will put the country on a path similar to the one currently being experienced by the graying economies of Europe, characterized by high dependency ratios and a deficit of young workers.

### ***The supply of skilled workers has stagnated***

14. The Uzbek labor market has become more dependent on highly skilled graduates in recent years. Higher education graduates held 21 percent of the all Uzbek jobs in 2004 compared with only 15 percent in 1997. Those with specialized secondary degrees accounted for an additional 25 percent and experienced a similar rate of growth. Both categories have become more prominent at the expense of workers who only possess secondary education or less, who make up about one-half of the labor force.<sup>15</sup> As the Uzbek economy moves up the value chain of production, it will continue to become more reliant on workers with specialized training, including those possessing higher education degrees.

15. However, the Uzbek higher education system does not supply nearly enough graduates to the labor market. At present, around 70,000 to 80,000 specialists complete higher education degrees in Uzbekistan each year. This represents a more than two-fold increase from the sector’s low point in 2000/2001. However, the country’s gross tertiary enrolment rate remains among the worlds lowest, hovering at around 9- percent, (Figure 6), and compares unfavorably with the pre-independence enrolment rate of 17 percent. By comparison, tertiary enrolment rates in many of Uzbekistan’s neighbors and other competing economies are around 40 to 50 percent, while

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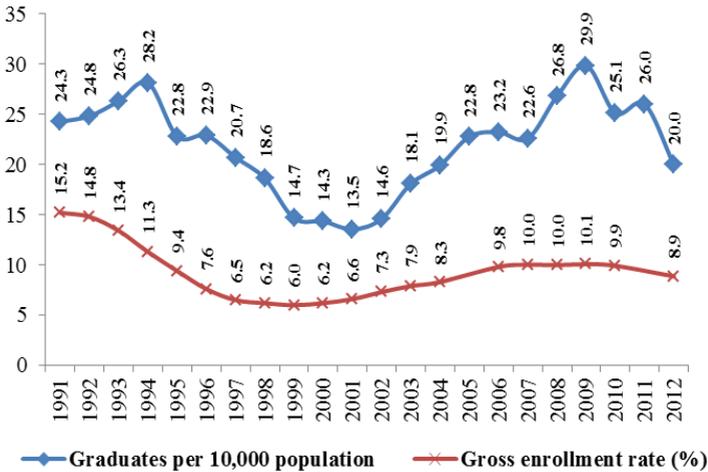
<sup>14</sup> CER (2011b) and World Bank (2012)

<sup>15</sup> Brunner and Tillet (2007), p. 172

in Russia and the OECD high-income countries these rates are around 75 percent.<sup>16</sup>

16. While Uzbekistan’s per capita income would predict a much higher enrolment rate of closer to 20 percent, the actual number of students admitted into universities and in each discipline is determined solely by an annual decree of the President on the recommendation of the Cabinet of Ministers and the Ministry of Economy (the planning body for the country). The competition for these university seats is fierce. In 2010, approximately 400,000 applicants competed for fewer than 60,000 places at tertiary institutions. At the same time, the demand for tertiary education among the youth of Uzbekistan has gone up, and the number of applicants per seat in jumped from 5.7 to 6.8 in the last five years<sup>17</sup>.

**Figure 6: Annual Number of Tertiary Graduates as a Share of Population and the Tertiary Gross Enrolment Rate in Uzbekistan, 1991-2012**



Sources: Brunner and Tillet (2007), MHSSE data, and World Bank EdStats database

Note: Gross enrolment rate is calculated as the number of students in tertiary education divided by the number of 19-24 year olds in the country.

<sup>16</sup> According to the World Bank EdStats database, higher education systems in Malaysia, Kazakhstan, and Turkey currently enroll 40, 41, and 46 percent of the university-age populations of these countries respectively. The average gross enrolment rate across the ECA region is 56 percent.

<sup>17</sup> The most recent figures indicate that this ratio has climbed to 8.5 in 2013,

17. The overall composition of higher education graduates in Uzbekistan has changed little with the majority still specializing in the field of education—which accounted for around 58 to 60 percent of the graduates completing their degrees in 1995, 2000, and 2010. Most of the rest entered the labor market with degrees in the physical or social sciences. Industry-related specializations currently lead the way among non-education fields, accounting for 13 percent of all graduates, a share which has also not changed since the 1990s (Table 1). The most significant change has come in the faster than average expansion in the field of economy and law where the share increased from 4.5 percent in 1995 to 10 percent by 2010, while the share of healthcare and associated fields has dropped from over 12 percent in 1995 to under 6 percent in 2010 (from over 6,000 graduates in 1995 to a low of just over 2,000 graduates in 2000 and recovering to just over 4,000 graduates by 2010).

**Table 1: Changes in the Number of Higher Education Graduates by Specialization, 2000 to 2010**

<i>Specialization</i>	<i>Number of graduates (thousands)</i>		<i>Share of all graduates (%)</i>		<i>10-year change (%)</i>
	<i>2000</i>	<i>2010</i>	<i>2000</i>	<i>2010</i>	
Education	20.8	45.7	57.8	59.8	+119.7
Industry and construction	5.4	10.2	15.0	13.4	+89.5
Economy and law	2.6	7.7	7.2	10.0	+195.1
Healthcare, physical culture, and sport	2.3	4.6	6.4	6.0	+100.6
Transport and communications	1.9	3.8	5.3	5.0	+100.9
Agriculture	2.7	3.5	7.5	4.6	+30.2
Art and cinematography	0.3	0.8	0.8	1.1	+178.0
<b>Total</b>	<b>36.0</b>	<b>76.4</b>	<b>100.0</b>	<b>100.0</b>	<b>+112.2</b>

*Sources:* CER (2011) and MHSSE data

### *Demand for skilled labor has grown faster than supply*

18. The steady growth of the Uzbek economy in recent years has been accompanied by a booming demand for skilled specialists. A recent study of labor shortages in several ECA countries concluded that Uzbekistan is experiencing a substantial shortage of university graduates. At the same time, the Uzbek labor market has a surplus of workers who possess only basic skills (those who have completed general secondary education or less). The same pattern was observed in all six of the countries examined in the study, leading the researchers to conclude that higher-order technical skills are in great demand throughout the region and that countries' education systems are failing to adequately meet this demand.<sup>18</sup>

19. A survey of Uzbek employers reveals another troubling trend regarding the demand for skills in the labor market. In 2008, 73 percent of the firms surveyed indicated that the skills and education of the country's workers posed an obstacle to doing business in Uzbekistan—up from 60 percent in 2005. More than one-third of the firms (35 percent) said that employee skills posed a “major” or “very severe” obstacle to growth.<sup>19</sup> In the same survey, Uzbek employers rated the “skills and education of workers” as the second biggest obstacle to doing business in 2008. This constituted a major shift from 2005 when worker skills ranked eighth among the 14 categories of business obstacles. While the respondents saw the burden of taxes and business regulations as having lessened in recent years, an inadequately trained workforce is clearly of growing concern to Uzbek employers.

20. Surprisingly, despite identifying employee skills as a major challenge, few firms have responded by offering on-the-job training in Uzbekistan. Only 10 percent of the firms surveyed in 2008 reported providing any formal training to their permanent employees, the lowest such share in the ECA region and significantly lower than the regional average of 34 percent. Even in countries like Turkey, Malaysia, and the high-income nations of the OECD—where worker skills are viewed as a less pressing constraint to growth—employers are still three to five times more likely to train their workers than in Uzbekistan. Among Uzbekistan's regional competitors like Russia and Kazakhstan—where more than one-half of employers report problems with finding workers with the necessary skills—firms are also up to

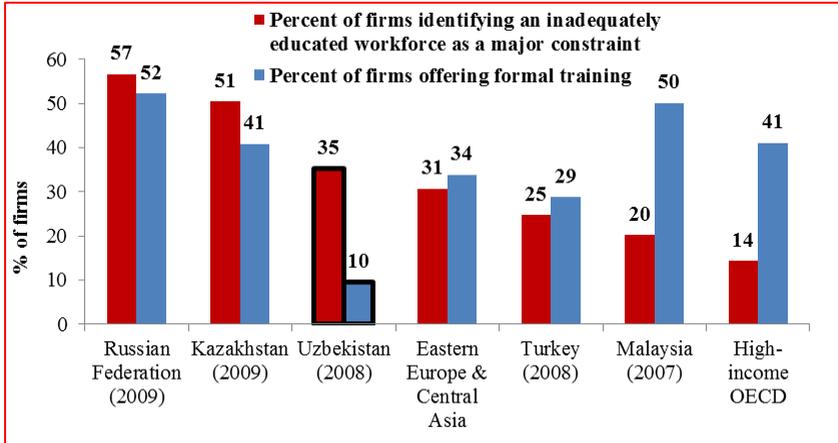
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<sup>18</sup> Sondergaard and Murthi (2012), pp. 26-30

<sup>19</sup> World Bank (2010). By comparison, the 2008 averages for the ECA region were 67 and 31 percent respectively for skills being an obstacle or a “major”/“very severe” obstacle to doing business (versus 73 and 36 in Uzbekistan).

five times more likely to train their workers on the job than in Uzbekistan (Figure 7).

**Figure 7: Employer Responses to Skills Shortages in Uzbekistan and Comparator Countries**



Source: World Bank (multiple years)

### ***Skills mismatches are evident in the Uzbek labor market***

21. In addition to employers reporting shortages of adequately trained workers, skills mismatches manifest themselves in several other ways. The choice made by large numbers of Uzbek workers (including many with higher education degrees) to seek employment abroad may be due to skills mismatches in the domestic labor market. Estimates of the number of Uzbeks working abroad—largely in Russia, Kazakhstan, and other countries of the Commonwealth of Independent States (CIS)—range from 2 million to as high as 4 million migrants or up to 23 percent of the total working-age population in Uzbekistan.<sup>20</sup> Although it is difficult to ascertain the exact level of education and skills of labor migrants, several surveys estimate that around one in six Uzbeks living abroad possesses a higher education degree, while other surveys suggest that this number may be as high as one in three. As a result, up to 1 million Uzbeks with higher education degrees may be working outside the country, which would constitute a substantial brain drain for

<sup>20</sup> World Bank (2012)

Uzbekistan. The decision to search for work outside Uzbekistan is often driven by inadequate job security and low wages in the domestic labor market for skilled and unskilled workers alike.<sup>21</sup>

22. In addition to external migration, informal employment is on the rise in Uzbekistan. World Bank estimates based on data from a 2005 survey put the share of workers employed in the informal sector at 42 percent.<sup>22</sup> If informality is defined as work performed without an employment contract, Uzbekistan's share of informal workers is higher than the levels in most European countries, though it is on a par with countries of similar levels of development.<sup>23</sup> Even though higher levels of education are associated with lower levels of informality—only 15 percent of Uzbek workers with higher education degrees are employed in the informal sector—informal and irregular employment still plays a significant part in the Uzbek labor market.

23. An additional concern is the widespread employment of higher education graduates outside their academic specialization. This practice indicates that their skills are misaligned with current labor market needs. According to data reported by HEIs to the Ministry of Higher and Secondary Specialized Education, graduates are often employed in sectors that they deem to be less desirable than the fields for which they were educated. As discussed earlier, university entrants consider the fields of construction, physical culture/sport, and art/cinematography as less desirable than other fields as is exhibited by their lower applicant rates. Yet these are also the sectors of the economy that employ more higher education graduates than the number who studied these disciplines (Table 2). In fact, these three fields consistently employ three to four times as many higher education graduates as the number who completes their studies in these fields each year. One possible explanation is that graduates from the more competitive fields—such as communications, education, and health—are unable to secure jobs in the areas of their studies and therefore look for jobs in sectors in which jobs are readily available. A more plausible reason for this mismatch is that higher education students lack information regarding labor market demand.

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<sup>21</sup> Abdullaev (2008) and CER/UNDP (2011)

<sup>22</sup> World Bank (2007), p. 48

<sup>23</sup> Packard et al (2012), p. 5

**Table 2: Employment Rates for Higher Education Graduates by Specialization, 2007 -2010**

<b>Specialization</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>
Construction	293%	247%	475%	432%
Art, cinematography, and other	276%	337%	342%	374%
Physical culture and sport	412%	359%	539%	367%
Agriculture	84%	106%	135%	141%
Law	58%	77%	74%	101%
Industry	67%	72%	98%	93%
Transport	62%	63%	78%	92%
Economy	60%	60%	60%	75%
Health	57%	62%	66%	71%
Education	44%	46%	55%	57%
Communication	26%	28%	31%	36%
<b>Total</b>	<b>58%</b>	<b>62%</b>	<b>74%</b>	<b>78%</b>

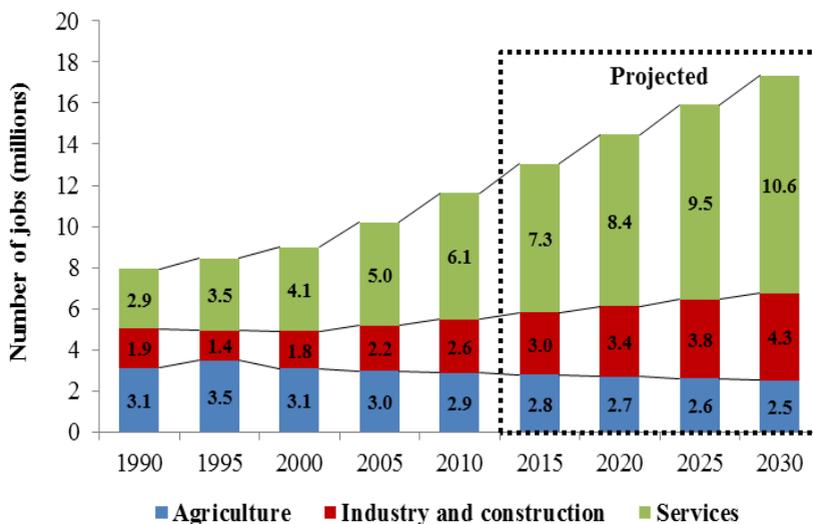
*Source:* World Bank staff calculations based on MHSSE data

*Notes:* Employment rates below 70 percent are shaded in red, 70 to 100 percent in yellow, and over 100 percent in green. Employment rates are computed as the number of higher education graduates from a given year employed in each sector divided by the total number of graduates from that graduation year as reported to MHSSE by the HEIs and employers. Employment rates greater than 100 percent indicate sectors that employ graduates of other disciplines.

24. In order to make better informed decisions about prospective labor market demand, university entrants must understand the projected demands of the Uzbek economy. Based on recent trends, the majority of jobs created by the country's labor market in the near future will be in the service sector. Between 2010 and 2020, the sector is estimated to generate 2.3 million new jobs—four out of every five jobs created by the Uzbek economy. By 2030,

there will be 4.5 million new jobs in services plus an additional 1.7 million jobs in the industrial sector. Agriculture, meanwhile, is expected to continue to shrink and shed jobs for the foreseeable future (see Figure 8). A growing share of these newly created jobs is likely to require higher-order cognitive and non-cognitive skills, thus benefitting higher education graduates who pursue education in the appropriate fields.<sup>24</sup>

**Figure 8: Actual and Projected Employment Totals by Sector, 1990-2010 (actual) and 2015-2030 (projected)**



Source: World Bank staff calculations based on data from CER (2011)

Note: Projections are based on the average employment creation trends by sector for 2005-2010.

25. Achieving the right mix of skills in the growing fields will be crucial to maximizing Uzbekistan’s economic development. At present, the largest share of graduates entering the country’s workforce possess degrees from

<sup>24</sup> Projecting recent job creation trends over the coming decades, the following fields are expected to produce the most jobs by 2030: trade, public catering, sales, and procurement (1.4 million); education, culture, art, science, and scientific support (0.9 million); industry and construction (0.8 million each); healthcare, physical culture and sport, and social welfare (0.6 million); and transport and communications (0.4 million). Other service sectors are expected to generate a combined 1.1 million jobs, while agriculture will shed about 0.4 million.

specialized secondary education institutions. Yet these vocational qualifications, which have been tremendously popular in recent years, do not provide workers with the higher-order skills demanded by employers in many of the growing industries. A recent survey of firms in Kazakhstan, for example, revealed that most employers prefer university graduates over those with SSE degrees when filling a wide array of skilled positions ranging from technical specialists in various fields to managers, accountants, and engineers.<sup>25</sup>

26. However, among those entering the Uzbek labor market, the mix of professionals with higher education degrees and vocationally educated technicians is currently out of alignment with demand. Across almost all sectors of the economy—with the exception of education—the number of higher education (HE) graduates produced every year is dwarfed by the number of those receiving SSE degrees. In industry and construction, for example, the ratio of HE to SSE graduates is nearly 1 to 10, and the ratios are even higher in other sectors (Figure 9). While the number of jobs created in the industrial and service sectors of the economy continues to exceed the flow of highly trained specialists, vocational training institutions flood the market with less well-trained technicians. With nearly 80 percent of the country’s students enrolling in vocational programs at the upper secondary level (a two-fold increase between 1999 and 2007), Uzbekistan is now a regional leader in terms of its emphasis on vocational training.<sup>26</sup> Yet the labor market—both in the present and the foreseeable future—is demanding larger numbers of higher educated specialists.<sup>27</sup> The current flow of workers into several Uzbek industries seems to be out of alignment with the optimal ratio between highly educated specialists and vocationally trained technicians, who can be considered to be complementary labor inputs into the production process (see Box 1).

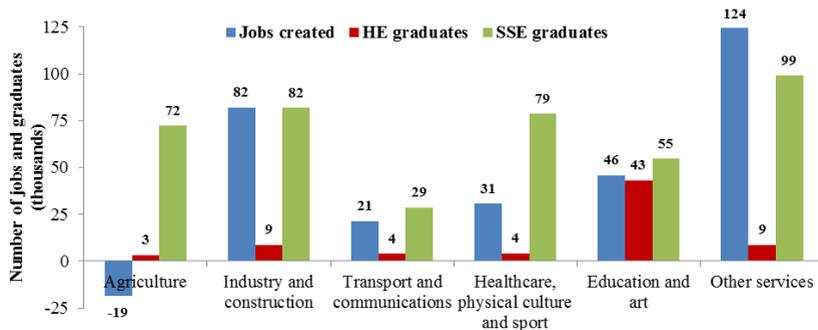
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<sup>25</sup> Ivaschenko (2008)

<sup>26</sup> Sondergaard and Murthi (2012), p. 66

<sup>27</sup> According to CER/UNDP (2011), pp. 30-31, the Uzbek economy “is experiencing a shortage of employees with a higher education – around 22 percent of jobs require employees holding them to have a higher education, while only 14.5 percent of the population has a higher education. The demand for employees with vocational education is very low (less than 20 percent), though the proportion of people with vocational education has already exceeded 31 percent and continue to grow every year.”

**Figure 9: Annual Net Job Creation by Sector and Number of Graduates from Higher Education and Specialized Secondary Education Institutions, 2010**



*Source:* World Bank staff calculations based on data from MHSSE and CER (2011).

*Note:* Annual net job creation figures are based on 2005-2010 averages. The numbers of graduates are from 2010.

### **Box 1: Achieving the Optimal Ratio of Professionals to Technicians for Economic Growth**

A number of studies have cataloged the different mixes of specialists (or professionals) and various kinds of technicians employed in the production process across a range of countries and industries. The first category typically refers to graduates with university degrees, while the second encompasses skilled workers who possess secondary vocational education or similar qualifications. While there is no consensus on the correct mix of inputs to use in the production of various goods and services, it is generally agreed that an unbalanced ratio of these complementary inputs leads to waste and a suboptimal allocation of resources (one example would be a factory with 90 engineers and only 10 technicians or 1 engineer and 99 technicians).

One report by the University of California at Berkeley examined the mix of skills held by workers in the competitive semiconductor manufacturing industry (Brown, 1996). It found that, for every engineer employed by US manufacturers, they employed an average of 1.7 technicians and 6.6 operators. For Asian manufacturers the ratios were slightly lower – 1.2 technicians and 5.9 operators for every engineer. Moreover, the manufacturers employed one supervisor for every 13 operators and one manager for every dozen engineers. An average facility with roughly 600 skilled workers (technicians, operators, and supervisors) would, therefore, employ approximately 85 university graduates (managers and engineers), a ratio of 7 to 1.

A more recent study (Mason, 2012) examined trends in employment within the UK's science, engineering, and technology (SET) sector. It found that university graduates made up 22 percent of the UK's SET workforce in 2010, up from 11 percent in 1994. During this time, the ratio of vocationally educated technicians for every university graduate in the British SET sector decreased from 4 to 1 to 2 to 1, while the ratio of lesser skilled workers to engineers dropped from 5 to 1 to 1.7 to 1. As a result, there were 3.7 technicians employed for every engineer in Britain by 2010, down from 9 technicians per engineer in 1994. This was a consequence of the SET sector in Britain employing larger numbers of university graduates and probably becoming more productive as a result.

As these case studies indicate, the optimal mix of vocational technicians and university educated specialists in the science and technology industries is likely to lie somewhere in the range between 2 to 1 and 7 to 1. The 10 to 1 ratio currently being produced in Uzbekistan is clearly out of line with internationally competitive standards. Increasing the production of higher education graduates in the sectors that are demanding ever larger numbers of highly skilled professionals would be a wise policy response to ensure that Uzbekistan achieves greater competitiveness and productivity.

27. Additionally, employers report varying levels of satisfaction with the quality and relevance of skills possessed by the graduates of higher education institutions and vocational colleges. A survey of 232 enterprises conducted for this report found that employers in Uzbekistan report varying degrees of satisfaction with the quality of skills of university graduates, but face significant difficulties in hiring sufficient quantities of these graduates<sup>28</sup> (Box 2). For example, industrial enterprises report the lowest levels of satisfaction with university graduates. Nearly half (49 percent) of industrial firms report difficulties in hiring sufficient numbers of qualified specialists with higher education and only one-third say that graduates' skills are better than they were a decade ago (compared to 36 percent saying that they are worse). In addition, while VET graduates are in ample supply, employers report even lower satisfaction rates with their skills (57 percent of firms are "very" or "extremely" satisfied with VET graduates' skills versus 79 percent for university graduates). Part of the problem may stem from the absence of further study in the vocational fields beyond secondary education, the sort of diversified professional specializations offered in countries like the USA through two-year community colleges.

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<sup>28</sup> Additional discussion of the results of the employer skills survey can be found in Annex 1 to this report.

## Box 2: Employers in Uzbekistan Report a Deficit of Skills Among Recent University Graduates

A survey of 232 enterprises in Uzbekistan conducted for this report reveals a number of gaps between the skills desired by employers and ones possessed by recent graduates of the country's higher education institutions.

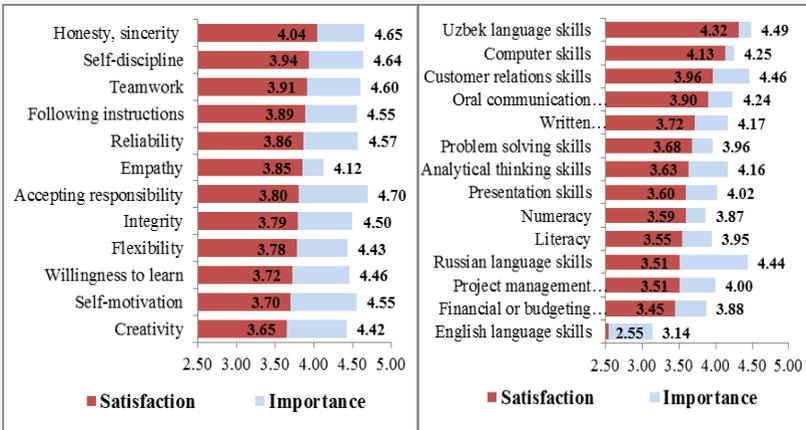
Applying the methodology developed by Blom and Saeki (2011), the survey identifies important *skill deficits* in the labor market. The deficits fall into two main categories: those dealing with the *inadequate quantity* of skilled specialists and ones dealing with the *quality and relevance* of their skills, their "*soft skills*" in particular.

When it comes to the quantity of graduates, 35 percent of *all employers* indicate that they have difficulty hiring sufficient numbers of qualified specialists with higher education. This share increases to nearly 50 percent among *industrial enterprises*. The main reason for the difficulty, as reported by employers, is that "*not enough specialists*" are available in the labor market.

With respect to quality, employers are *generally satisfied* with the skills of the university graduates they hire (though less so with the skills of graduates from vocational colleges and academic lyceums). Nearly half (46 percent) of *all employers* consider the quality of skills of recent university graduates to be better than it was 10 years ago. However, that share is only 33 percent among *industrial enterprises*, with 36 percent reporting that today's skills are worse than before (and 31 percent saying that they are "about the same").

In assessing graduate qualities within individual skill categories, employers report highest levels of satisfaction with graduates' Uzbek language and computer skills and lowest satisfaction with English language skills. However, employers also rate English language skills as being the least important. When importance of particular skills is taken into account, the largest *skill deficits* (measured as the difference between "importance" and "satisfaction" scores on a five-point scale) are found in the area of Russian language skills and a number of "*soft skill*" categories. In particular, employers report that "accepting responsibility for one's actions", "self-motivation", "creativity", and most other soft skills are severely lacking among Uzbekistan's recent university graduates.

The figures below report the satisfaction and importance levels of various general/"soft" skills (left) and specific skills (right) reported by the surveyed employers about the university graduates hired between 2009 and 2012. The importance and satisfaction of each skill is assessed on a five-point scale, where 1="not at all" and 5="extremely". The size of the gap between the two bars is the skill deficit in a particular skill category.



Additional information about the survey, including a detailed description of its methodology and results, can be found in Annex 1 and the companion consultant report (Tahlil 2013).

## B. Tertiary Education and the Innovation Ecosystem: The Ideas Game

### *Innovation and Technological Change are Critical Contributors to Economic Growth and Development*

28. Most standard economic models attribute growth to the accumulation of capital and labor and to technological change and development.<sup>29</sup> For example, Romer (1993) argues that while discussing growth and development “it helps to keep two extreme views in mind. The first is based on an object gap: Nations are poor because they lack valuable objects like factories, roads, and raw materials. The second view invokes an idea gap: Nations are poor because their citizens do not have access to the ideas that are used in industrial nations to generate economic value.” He goes on to say that “these views are not mutually exclusive. A developing nation can suffer both gaps at the same time.” The process of innovation includes creating new knowledge and technology, adapting and adopting existing technology, and their dissemination and use. The innovation process critically relies on workers with both basic and advanced skills and an ability to learn (see Box 3). And the tertiary education system remains key to developing people with advanced skills, ideas and research, as well as teachers who can teach basic skills.

<sup>29</sup> Solow (1956), p. 57, Lucas (1988), and Romer (1993)

### **Box 3: Innovation - Creating, Adapting and Using Technology**

Innovation includes creating new knowledge as well as acquiring and adapting knowledge from abroad and absorbing and using in-country existing knowledge. Each must be understood as a different, but important, process of innovation.

**Creating New Knowledge and Technologies.** The first kind of innovation results from the creation of new knowledge and technologies, either for the domestic or sometimes the international market. Creation of these new technologies and knowledge (usually packaged as "new products") requires a whole host of antecedent activities, ranging from R&D and market research to engineering the necessary production facilities (De Negri et al. 2006). Because of the complex process involved, this innovation type predictably requires workers with higher levels of schooling and extensive job training.

**Acquiring and Adapting Foreign Technologies.** Acquiring knowledge and technologies from abroad most commonly involves importing new technologies (typically machinery), which may require significant upgrades of worker capacities. Thus, a critical factor in such innovation is workers' ability to learn to operate new machines through reading and understanding product manuals and learning to provide routine maintenance through basic training. Equally important is the ability of process planners and supervisors to resolve problems in adapting equipment to its new setting and revising processes and procedures to take full advantage of the potential it offers. Obviously, for this type of innovation, both basic skills for operators and advanced skills for supervisors and planners are critical.

**Using, Adapting, and Disseminating Existing Technology.** The third kind of innovation involves the absorption and use of knowledge and technologies already in the country, which implies diffusion of a technology or process already being used by harnessing it elsewhere. These less obvious forms of innovation also require the upgrading of existing human capital stocks through on-the-job learning. Basic skills in reading, communication, and mathematics are critical because they are the springboard for further learning that ultimately culminates in process and product improvements.

*Source:* World Bank (2008).

29. It is useful to look at some stylized facts about the Uzbek economy to inform further discussion. For simplicity we will present indicators of the economy and its physical capital and human capital alongside the indicators of the business and innovation environment in comparison to other countries. From Table 3 it is clear that on indicators such as trade (as a proxy for openness to goods and associated technology from outside) and physical capital accumulation (as a proxy for the accumulation of valuable objects like roads and factories), Uzbekistan compares favorably with its comparators. In addition, when looking at the changing structure of imports in Figure 2, it is striking that imports of machinery account for almost half of all imports (up from 10 percent 20 years ago). It is reasonable to assume that some of the latest technology comes packaged with the imported machinery, but is the country ready to adopt and adapt this technology and use it effectively to generate growth? The answer lies in looking at the skill set of the workforce and at the overall environment for business and innovation in the country. Unfortunately, Uzbekistan performs poorly on this front. Its tertiary education enrolment rate is low by both regional and international standards, and employers complain of skills deficits amongst both school and university graduates.<sup>30</sup> In addition, Uzbekistan ranks in the bottom quarter of all countries in terms of its business and innovation environment.

### *Uzbekistan's economy lags behind in innovation*

30. Those countries whose tertiary education systems have successfully contributed to economic growth have trained their graduates to participate in the knowledge economy by actively working with industry, the private sector, and the government. Several studies have shown that publically funded research and university-industry collaborations in developing, adapting, and adopting technology can make tangible contributions to economic growth and modernization.<sup>31</sup> It is therefore important to look in detail at the reasons why Uzbekistan falls short of having a healthy innovation ecosystem, beyond its low enrolment rate in tertiary education.

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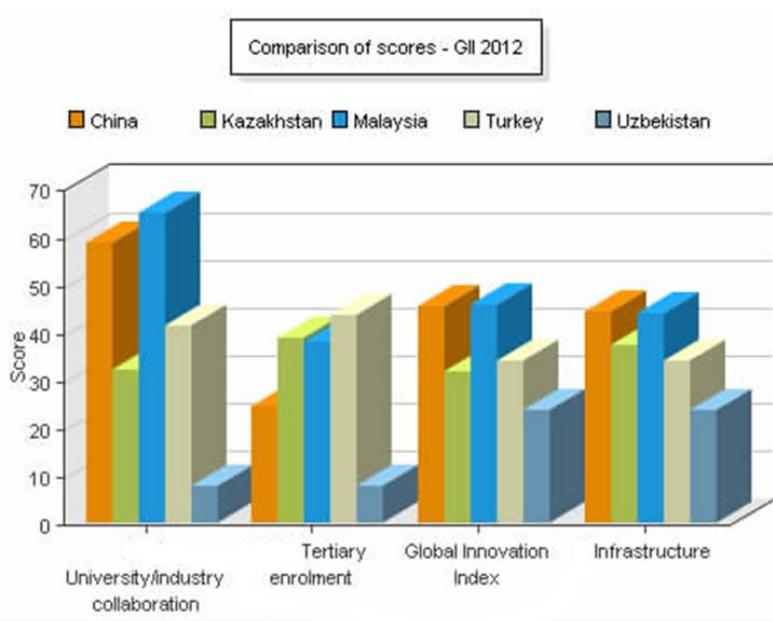
<sup>30</sup> Sondergaard and Murthi (2012), and Box 3 above.

<sup>31</sup> Weber and Duderstadt (2010)

**Table 3: Business and Innovation Environment - Indicators from the Economy and Investments in Human and Physical Capital**

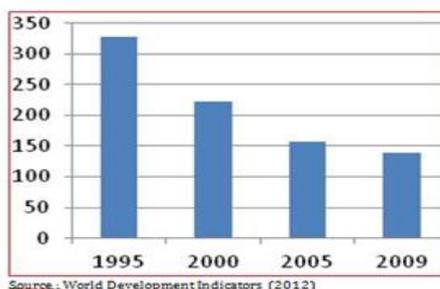
Categories	Indicators	Upper middle income	Lower middle income	China	Turkey	Malaysia	Kazakhstan	<i>Uzbekistan</i>
The Economy	Population (Millions)	2,490	2,533	1,344	74	29	17	<b>29</b>
	GDP (current US\$ Billion)	18,245	4,793	7,318	775	288	188	<b>45.3</b>
	GDP per capita (current US\$)	7,329	1,892	5,445	10,524	9,977	11,357	<b>1,546</b>
	GDP per capita (constant 2000 US\$)	3,423	937	2,640	5,741	5,345	2,630	<b>993</b>
	Trade (as % of GDP)	59.7	63.6	58.7	56.4	167.2	77.2	<b>59.1</b>
Physical Capital	Gross capital formation (% of GDP)	30	29	48	24	24	22	<b>23</b>
	Mobile cellular subscriptions (per 100 people)	92	80	73	89	127	156	<b>92</b>
	Internet users (per 100 people)	38	16	38	42	61	45	<b>30</b>
	Fixed broadband internet access tariff (US\$ per month), 2009	71	66	18	18	19	17	<b>199</b>
Human Capital and Ideas	Tertiary Enrolment Rate (2009)	33	17	24	46	40	40	<b>10</b>
	Patent applications per million of population (2009)	249	26	392	56	224	105	<b>19</b>
	Scientific and technical journal articles (2009)	139,750	28,048	74,019	8,301	1,351	99	<b>139</b>
	Scientific and technical journal articles per million of Population	56	11	55	113	47	6	<b>5</b>
Business and Innovation	<b>Ease of Doing Business Rank (out of 185 countries- 2013)</b>			91	71	12	49	<b>154</b>
	<b>Global Innovation Index Rank (out of 145 countries- 2012)</b>			34	73	32	83	<b>127</b>

**Figure 10: Global Innovation Index (with key factors)**



31. The Global Innovation Index (GII)<sup>32</sup> rankings as well as the Ease of Doing Business Index (EODBI)<sup>33</sup> rankings both show Uzbekistan lagging behind its comparator countries. While the indexes are sophisticated and take many factors into consideration, for the purpose of this discussion it is instructive to highlight some key factors that contribute to the low rankings on the human development front. As Figure 10 shows, while the country lags behind its comparator countries in enrolment

**Figure 11: Number of Technical and Scientific Journal Articles Published by Uzbek Researchers**



Source: World Development Indicators (2012)

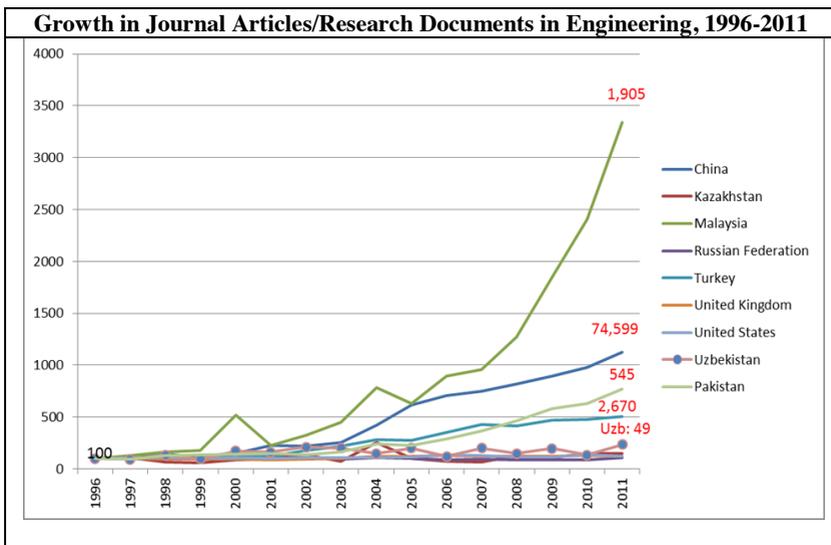
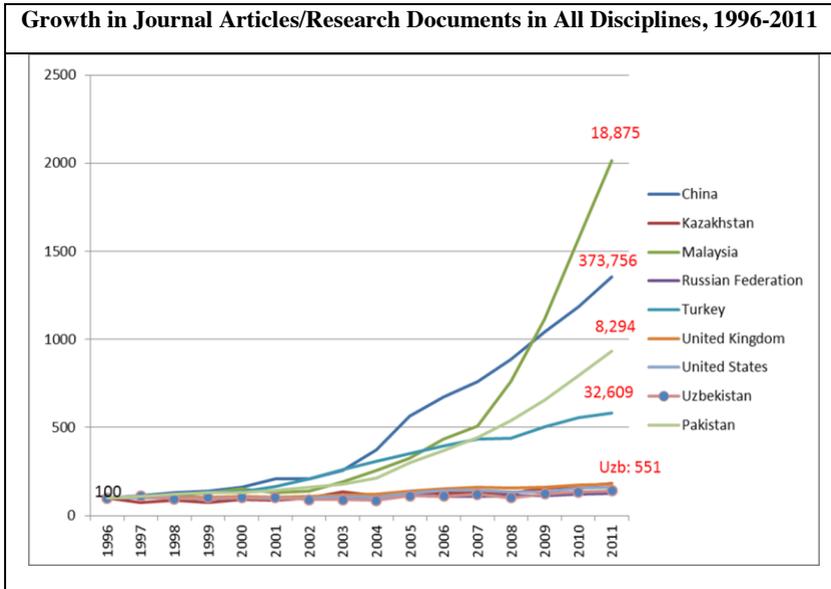
<sup>32</sup> <http://www.globalinnovationindex.org/gii/> compiled by of the INSEAD Business School and the World Intellectual Property Organization (WIPO).

<sup>33</sup> <http://www.doingbusiness.org/> compiled by the World Bank Group.

and infrastructure, the biggest gap is in terms of its very low university-industry collaboration.

32. Modern science and ICT infrastructure coupled with active research and development can be key indicators of an innovation environment in any country. When examining these indicators, it is clear that the situation in Uzbekistan is mixed (see Table 3). Proxies for technology adoption such as the penetration of Internet access and mobile phones would suggest a population that is modernizing faster than their per capita income would predict. However, the tariffs on Internet broadband access are exceptionally high, costing almost 10 times as much as in any of the comparator countries, which is almost certainly restricting Internet use. In addition, internationally recognized scientific research is worryingly low. Figure 11 shows a decline in the number of technical and scientific journal articles published by Uzbekistan's researchers over time. Figure 12 shows how overall research activity in Uzbekistan compares poorly with research in comparator countries over the last 15 years.

**Figure 12: Growth in Research Activity in Uzbekistan in an International Perspective**



Note: Retrieved May 09, 2013, from <http://www.scimagojr.com>

33. Finally, applying the World Bank's Knowledge Assessment (KAM),<sup>34</sup> where the Knowledge Index (KI) is computed as combination of indices of education,<sup>35</sup> innovation,<sup>36</sup> ICT usage,<sup>37</sup> and research activity, it becomes clear that Uzbekistan is falling further behind the rest of the world over time (Figure 13). Among the 145 countries for which KI was computed in 2012, Uzbekistan ranked 105<sup>th</sup> (slipping from a rank of 84<sup>th</sup> in 1995), whereas Kazakhstan, a regional comparator, ranks 73<sup>rd</sup> (improving from a rank of 79<sup>th</sup> in 1995). As Figure 13 shows, while Kazakhstan has slipped relative to 1995, it has done much better than Uzbekistan and its other comparators. Clearly the causes of Uzbekistan's decline in the rankings need to be identified, examined, and remedied if the country is to fulfill its ambition and potential to advance and modernize. The problem is even more starkly apparent when one looks at the innovation index by itself. Figure 13 shows that Uzbekistan has fallen behind on the innovation index since 1995, whereas almost all of its comparators have improved their performance.

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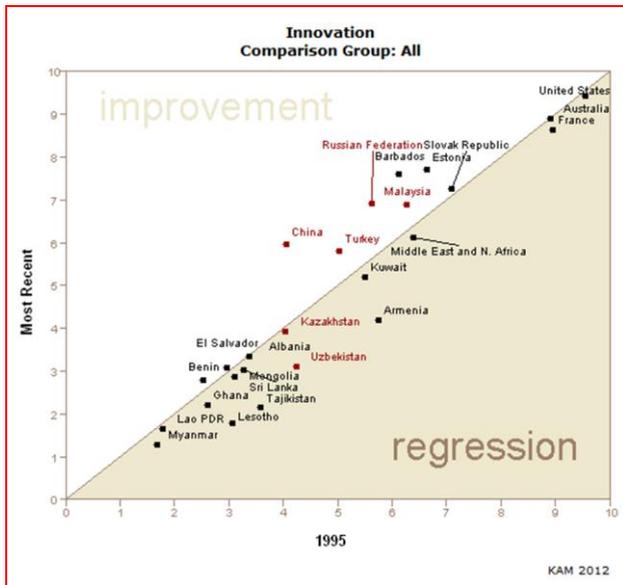
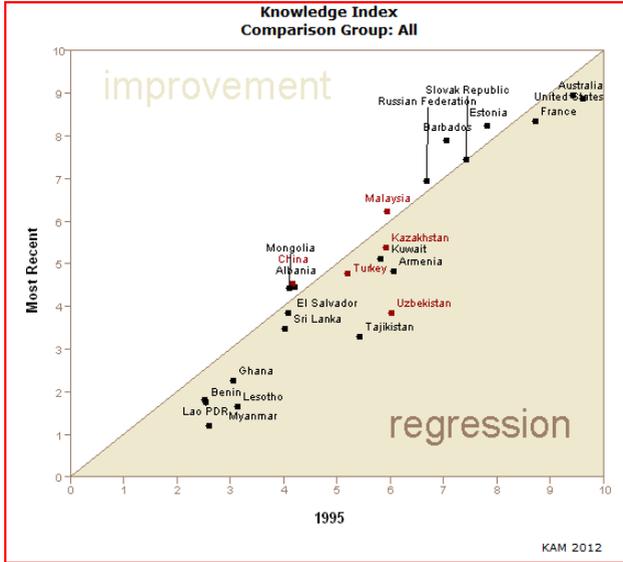
<sup>34</sup> This interactive model can be accessed at <http://www.worldbank.org/kam>.

<sup>35</sup> Based on average years of schooling and secondary and tertiary enrolment rates.

<sup>36</sup> Based on royalty and license fee payments and receipts, patent applications granted by the US Patent and Trademark Office, and scientific and technical journal articles.

<sup>37</sup> Based on the number of telephones per 1,000 people, of computers per 1,000 people, and of Internet users per 10,000 people

**Figure 13: Uzbekistan's Declining Capacity for Innovation, Knowledge Creation, and Knowledge Absorption, 2012 versus 1995**



34. As demonstrated by the results of the analyses presented in this chapter, the higher education system in Uzbekistan does not fully meet the demands of the country's economy. The qualitative and quantitative mismatches between what is produced by the universities and what is demanded by the market in terms of highly trained specialists are glaring. In the realm of research, too, the Uzbek higher education system does not fully meet the demands of the country's economy for innovative ideas. Given the country's aspirations to reach upper middle income status by 2030, a modernization of the higher education sector is needed in order to align its outputs more closely with the evolving demands of the economy. The following chapter examines the current state of Uzbekistan's tertiary education system with a view to modernizing the elements necessary to allow it to meet the country's future demands.

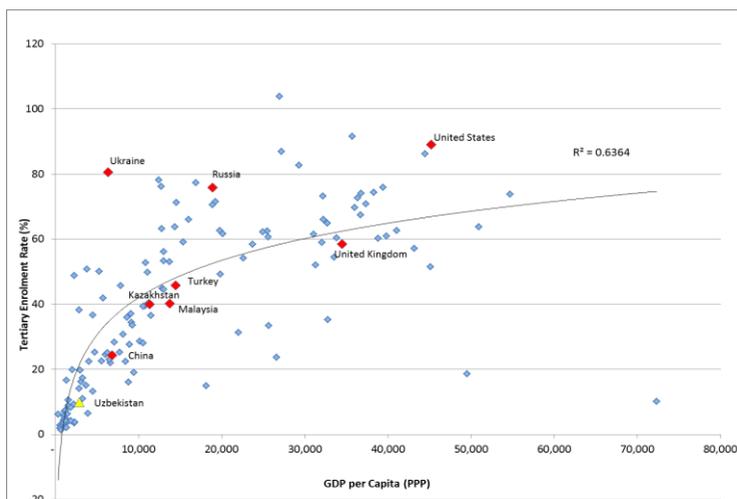
## CHAPTER 3: INTERNAL MANAGEMENT - HOW EFFECTIVELY IS THE TERTIARY EDUCATION SYSTEM ORGANIZED?

### A. Access to Tertiary Education

*Tertiary enrolment rates in Uzbekistan are among the lowest in the world*

35. Uzbekistan's gross tertiary enrolment rate declined from 17 percent in 1991 to 9 percent in 2011 and is now low by regional and international standards (Figure 14). Two other countries in the region, Kazakhstan and the Kyrgyz Republic, have enrolment rates of 40 and 49 percent respectively. Internationally, other lower-middle-income countries have an average tertiary enrolment rate of 18 percent. Russia and the high-income countries of the OECD have tertiary enrolment rates of around 75 percent. While Uzbekistan's level of per capita GDP would predict an enrolment rate of 20 percent (Figure 14), the actual intake rate into higher education institutions is substantially lower.

**Figure 14: Gross Tertiary Enrolment Rates and Per Capita GDP, 2009**



Source: World Bank's World Development Indicators for 2012

36. The number of graduates from tertiary institutions in Uzbekistan sharply declined after independence. Between 1991 and 2001, the number of university graduates declined by one-third and the enrolment rate dropped as low as 6 percent<sup>38</sup>. Although both indicators have recovered somewhat in recent years, the enrolment rate remains at globally low levels and the number of graduates as a share of the country's population remains below pre-independence levels of 16 percent. There are a total of 64 HEIs in the country with a total enrolment of 252,000 students. Of all HEIs, only 6 are private-public partnerships and all 6 are associated with foreign HEIs. Of a total student population of 252,000, less than 1 percent attends these local branches of foreign universities.

37. In addition, despite low enrolment in the current system, there is no initiative to experiment with or take advantage of openly available online resources such as the so-called Massive Open Online Courses (MOOCs) to provide an option for more broadly accessible higher education at a low cost (see Box 4).

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<sup>38</sup> The government has argued that the reduction in enrolment resulted from a deliberate choice to restrict "less effective" areas of studies. It is unclear how "effectiveness" was determined, and which study areas were targeted.

#### **Box 4: Expanding Access to Tertiary Education through Massive Open Online Courses**

In recent years, advances in internet technologies have led to a rapid expansion in web-based provision of tertiary education. Characterized by large-scale open access at significantly lower cost than traditional university courses, Massive Open Online Courses have expanded to serve millions of students worldwide since 2012. While it is too early to predict the long-term impact of these instructional methods, MOOCs have the potential to transform the manner and scale in which education is delivered to those who demand it.

Tertiary education provision through MOOCs has several distinct advantages over traditional modes of delivery. Chief among these are the expanded scale and reduced cost of provision, allowing broader access to learning than ever before. In systems where the public sector holds a dominant role in meeting the needs of higher education, the expansion and diversification of provision allows students to access a wider selection of offerings from many international providers and customize their course of studies to match their precise and immediate needs. This is especially important in countries with low tertiary enrolment but moderate-to-high internet penetration rates.

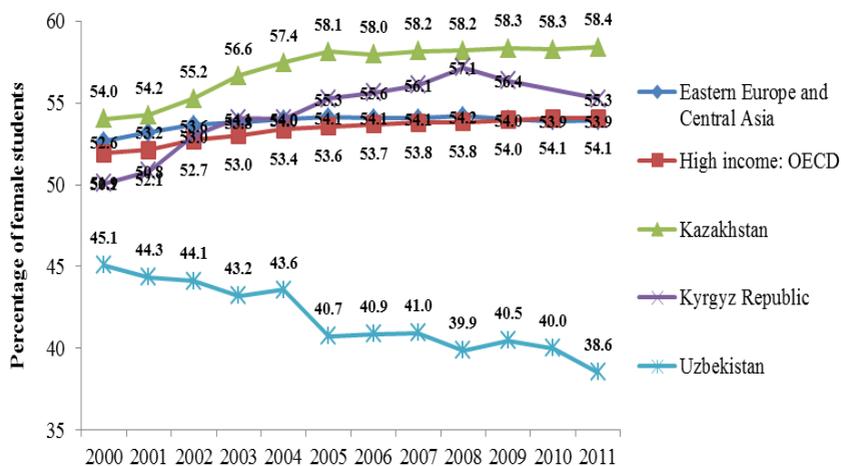
What can governments do to take advantage of the growing importance of MOOCs in the education marketplace? First and foremost, policymakers can amend governance and regulatory frameworks to enable new and non-traditional models of education provision. Quality assurance systems must be updated to account for the existence of MOOCs. Governments can also help facilitate the recognition of MOOC certificates in the labor market, thus ensuring their usefulness to potential students. MOOCs can both compete with and complement the existing structures of tertiary education provision. To harness their potential, policymakers should channel MOOCs' disruptive power into meeting the actual needs of the country's education system and the labor market.

*Source:* Authors based on Juroš (2013).

*Gender disparities in tertiary enrolment are among the highest in the region*

38. In 2011, only 39 percent of students enrolled in Uzbek universities were women. This ratio stands in sharp contrast to the rest of the world where female enrolment rates have reached parity with or surpassed those of male students (Figure 15). In Eastern Europe and Central Asia, as well as in the high-income countries of the OECD, women make up on average 54 percent of the student population. In the Kyrgyz Republic, Russia, and Kazakhstan, this ratio stands at 55, 57, and 58 percent, respectively. Yet Uzbekistan remains the only outlier whose female enrolment rates in higher education remain persistently low. Only Tajikistan and Turkmenistan enroll fewer women in the ECA region. Moreover, while its neighbors have made progress in enrolling more women in universities over the past decade, in Uzbekistan the share of female students has declined from 45 percent to under 39 percent in the same period.

**Figure 15: Female Students as a Share of Total Tertiary Enrolment, 2000-2011**

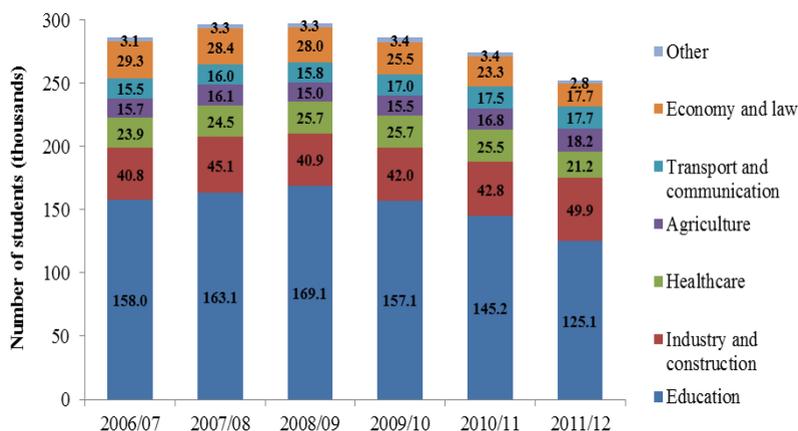


Source: World Bank EdStats database

***Enrolment patterns are misaligned with the needs of the evolving economy***

39. In the current structure of the Uzbek higher education system, roughly half of all students enroll in the field of education. Of the 252,000 students enrolled in higher education during the 2011/12 academic year, 49.6 percent were in education faculties, while the rest studied industry and construction (19.8 percent), healthcare (8.4 percent), agriculture (7.2 percent), followed by transport and communications (7.0 percent), and economy and law (7.0 percent). In recent years, higher education enrolment trends have shifted marginally closer to the government’s stated national development goals. Enrolments in the fields of education, healthcare, and economy and law have decreased in favor of industry and construction and of transport and communications. However, agricultural faculties continue to grow despite an economy-wide shift away from agricultural production (Figure 16). A disturbing trend emerges from this data: at a time when the Uzbek economy demands increasing levels of specialists with advanced training, the overall number of student places in the country’s universities is shrinking. Even if the education faculties are excluded, the total number of students enrolled in all other fields declined by more than 2,000 in the 2011/12 academic year. The total number of student places lost since 2007/08 is 6,400.

**Figure 16: Distribution of Student Enrolment by Disciplines, 2006/12**



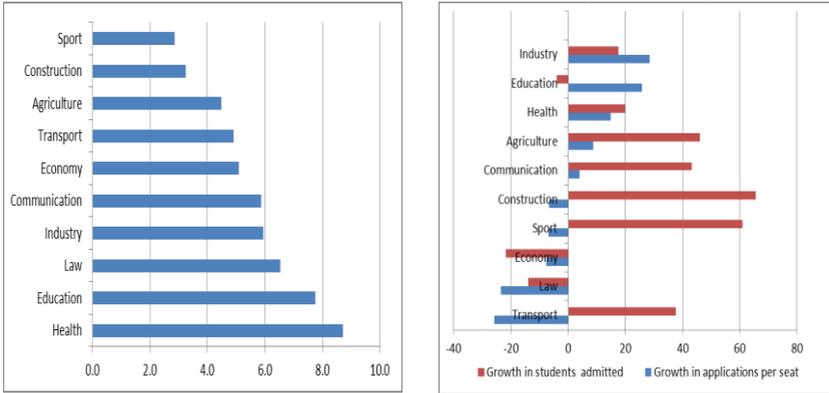
Source: MHSSE data

40. The restricted supply of higher education provision is the main cause of low enrolment. The annual university enrolment and intake levels are determined by an annual presidential decree on the recommendation of Cabinet of Ministers in consultation with the Ministry of Economy, Ministry of Labor and Social Protection and MHSSE. The decree sets the maximum number of student places (both budget- and contract-financed) and the corresponding tuition fees in each discipline at each university. In 2010, more than 400,000 applicants competed for 64,000 places in Uzbekistan's 65 HEIs. The ratio of 6.3 applications for each student place (up from 5.4 in 2006) corresponds to an acceptance rate of less than 16 percent, on a par with the most prestigious universities in the United States. The artificially low admission quotas set by government decree, therefore, are the main cause of low tertiary enrolment in Uzbekistan. Low enrolment levels are not, therefore, caused by a lack of demand for higher education.

41. In addition the skills or subject areas favored by students (as indicated by their applications) are not necessarily those that the higher education system teaches adequately. Figure 17 shows the variation in student demand for different subject areas (expressed in the growth of the number of applications per seat), versus the change in supply (expressed as the growth in the students admitted) over the last five years. For example, in transport there is a decrease in demand for seats, while supply of seats is going up. It is worth bearing in mind that under the current system a student can only make one application to enter university and must specify both the discipline and the particular university, and hence the choices are made carefully and carry high stakes. With enrolment numbers continuing to grow, entrance into HEIs remains competitive.

**Figure 17: Evolution of Student Demand for Different Subject Areas at University**

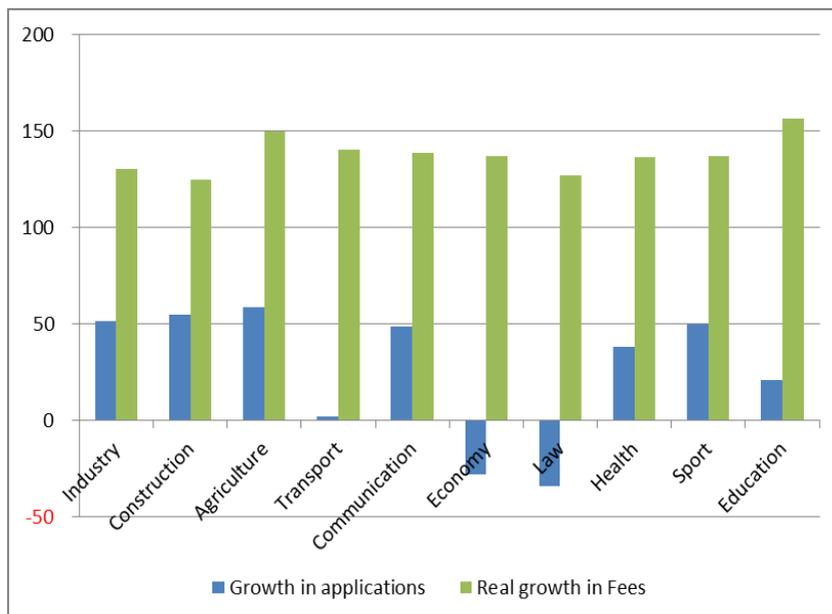
*Applications per seat available (2010)      Growth in applications per seat and admissions (2005-2010)*



Source: MHSSE data

42. Growing competition for scarce university places speaks volumes about the desire of Uzbekistan's youth to pursue higher learning. This is especially true in industry-related disciplines, for which there was a 30 percent increase in applications per student place between 2006 and 2010. Yet the rigidity of the admission quotas does not make it possible for this demand to translate into a greater number of graduates receiving science and engineering degrees. The low enrolment levels are also not caused by the increasing cost of higher education (see Figure 18). Despite a fourfold increase in tuition fees since 2008 and a greater emphasis on contract financing, competition for university places continues to intensify. For example, the healthcare field, which charged one of the highest levels of tuition in 2010 (around US\$1,900 per year), also had the most competitive application process that year (7.6 applications for each available place).

**Figure 18: Growth in Fees and in Applications to Uzbek Higher Education Institutions, 2005-2010**



43. The lack of effective private provision of higher education is an important contributing factor to the low levels of enrolment that characterize the Uzbek system. Of the 64 HEIs currently operating in Uzbekistan, only 6 are public-private partnerships (all 6 are associated with foreign universities). No domestic private provider of higher education has entered the market, which is a strong indication of the lack of an enabling regulatory environment for private provision. While other countries have successfully expanded access to higher education by means of well-regulated private provision, Uzbekistan has yet to follow suit.

### **B. Governance of Tertiary Education**

44. Fielden (2008) defines tertiary education governance as “all those structures, processes, and activities that are involved in the planning and direction of the institutions and people working in tertiary education.” The system-wide aspects of governance include laws, policies, and processes that facilitate the efficient operation of HEIs. At the national level, the main responsibility of the State is to establish the incentives and regulations that ensure the smooth and effective functioning of the higher education system. At the level of the HEIs, governance relates to the autonomy and

accountability of each institution and the rules and regulations that enable it to deliver its mission. Key elements of governance are:

- a. The national vision for higher education and the supporting legal framework
- b. The management structure and capacity of the higher education authorities
- c. The autonomy of the HEIs
- d. Quality assurance and accountability
- e. Financing

45. Elements a, b, and c are discussed in this section, and quality assurance and financing are discussed in separate sections that follow.

***The National Vision for Higher Education and the Supporting Legal Framework Need to be Consolidated***

46. In Uzbekistan, the Law on Education proclaims education as a priority of the State and guarantees equal rights to education. Primary and secondary (general and vocational) education are free and compulsory. To comply with the law, the Government of Uzbekistan increased state budget expenditure on education from 6 percent of GDP in the mid-1990s to 7.4 percent of GDP in 2012, focusing mostly on primary and secondary education where the country has now achieved nearly universal enrolment rates. In contrast, the tertiary education system, which receives only a small fraction of the funds allocated to the education sector, has traditionally been characterized by low access, uneven quality, and limited relevance to the rapidly changing needs of the country's economy. Recognizing this, in 2011 the government set out a strategic vision for modernizing the higher education sector in Presidential Decree no. 1533, which aims to upgrade HEIs, ensure quality, and improve the governance and management of the sector.

47. The legal framework of education system consists of a hierarchy of laws, national programs, government decrees, and regulations issued by different state bodies. Article 41 of the Constitution of Uzbekistan stipulates that everyone has the right to education and that the State will guarantee free secondary education. Article 4 of the Law on Education reiterating the right to education emphasizes that graduates of all kinds of pre-tertiary educational establishments, including both general schools and vocational schools, have an equal right to continue their education in higher education institutions. In 1997, the State adopted a National Program for Personnel Training, which ensured that higher education could be obtained either on a State grant or on full tuition basis. In 2011, Presidential Decree No. 1533 was the first substantial directive in the field of higher education, and it identified the lack of coordination between academia and industry as a key shortcoming of the higher education sector. Subsequently, in 2012, Decree No. 371 of the Cabinet of Ministers called for the introduction of a university ranking system aimed

at improving the quality of academic and research activities in higher education institutions and aligning the work of these institutions with the requirements of the economy and the labor market. However, while several directives exist that deal with modernizing different aspects of the higher education sector, there is no comprehensive public document that lays out the medium- and long-term vision for the development of the higher education sector in the future.

48. For example, there are no non-governmental universities in Uzbekistan, although the Education Act of 1997 defined a legal basis for the establishment of non-governmental HEIs in the country. Currently, there are 6 branches of overseas HEIs in Uzbekistan. In Uzbekistan, the establishment of branches of overseas universities follows requirements defined in specific decrees of the President of the Republic. For example, the Turin Polytechnic University in Tashkent is a technical institution, which was established in 2009 under a decree of the President of the Republic of Uzbekistan, with the aim of training specialists for the automotive, electronics, and power engineering industries (see Annex 2 for details). In the absence of clear general rules and regulations governing the private provision of higher education, the sector has not been able to attract private providers, whereas such providers have flourished in places like Malaysia, China, Qatar, and the UAE.

### ***Management of the Tertiary Sector is fragmented***

49. The management of Uzbekistan's higher education sector is fragmented, which makes it difficult to assess its capacity as a whole. This fragmentation creates some room for overlapping responsibilities. At the same time, the system is strongly centralized and regulated, with the main responsibilities being shared among the following key actors. The President's office has a special department lead by State Advisor responsible for education policy development. Parliament has a permanent Committee for Education, which oversees education policy development and reviews implementation results. One of the Deputy Prime Ministers is responsible for overseeing education development issues, while the Cabinet of Ministers has a specific department (Social Complex) that is responsible for the immediate oversight of education, health, and social development and in particular higher education development issues. The Cabinet of Ministers provides high-level guidance to the department and approves the State Education Standards. The Ministries of Economy and Labor are tasked with ensuring an adequate supply of graduates for the labor market, and their estimates form the basis of admissions quotas set by the Cabinet of Ministers. The Ministry of Higher and Secondary Specialized Education governs the HEIs and mediates between them and other ministries such as the Ministry of Finance, which is tasked with managing the public financing for HEIs, and the Academy of Sciences, which is tasked with providing policy advice on higher education sector

research. Finally, the HEIs are tasked with complying with SES and with internal administration. Because there is a large degree of overlap in the responsibility for developing and implementing policies in tertiary education, it is difficult to ensure system-wide accountability. Given the pivotal nature of their roles, it is useful to examine in more detail the Cabinet of Ministers and Ministry of Higher and Secondary Specialized Education.

50. Article 25 of the Law on Education<sup>39</sup> defines the main responsibilities of *Cabinet of Ministers* as: (i) the realization of state policy in the education sector; (ii) the management of the relevant State bodies; (iii) the implementation of development programs; (iv) the administration of the process of establishing, reconstructing, and liquidating educational establishments; (v) the issuing of licenses for educational activity; (vi) the definition of rules and procedures of accreditation; (vii) the attestation of educational establishments as well as the recognition of degrees; (viii) the approval of state educational standards; (ix) the appointment of the rectors of HEIs; and (x) the definition of rules and procedures governing the transfer of students from one HEI to another. The State Testing Center under the Cabinet of Ministers is responsible for the attestation and accreditation of educational establishments and for administering enrolment tests to university applicants.

51. Article 26 of the Law on Education defines the responsibilities of the *Ministry of Higher and Secondary Specialized Education* as: (i) implementing State policy in the education sector; (ii) coordinating and providing methodological guidance to HEIs; (iii) ensuring the implementation of the SES and the State quality requirements for professional development; (iv) implementing new teaching methodologies and technologies; (v) organizing the development and publication of textbooks and manuals; (vi) organizing teacher in-service training; and (vii) nominating rectors. In order to fill some legislative gaps, the MHSSE issued a Regulation on Higher Education in 2003, giving itself the right and overall responsibility to develop, approve and implement the SES.<sup>40</sup> Now the Cabinet of Ministers approves only a sample standard, and the Ministry itself approves all other standards. It is worth noting that the MHSSE directly manages only half of HEIs, while the others are under the control and financial administration of the relevant line ministries,<sup>41</sup> although the MHSSE is still responsible for setting the SES. However, the MHSSE has only 43 staff to deliver its wide range of responsibilities, and they are overloaded with daily management and supervision tasks.

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<sup>39</sup> The Law on Education N464-I. Issued in 29.08.1997

<sup>40</sup> Regulation about Higher Education, approved by the Minister of HSSE, order # 9, February 9, 2003

<sup>41</sup> Such as the Ministries of Agriculture, Health, and Industry

**Table 4: Distribution of Responsibilities in Higher Education Management**

<b>Actor</b>	<b>Responsibilities</b>
<b>Cabinet of Ministers</b>	Development of strategy for the HE sector
	Design and implementation of policies for the HE sector
	Approval of procedures and outcomes of quality assurance
	Approval of State Educational Standards
	Granting and cancelling licenses of non-state HEIs
	Determining the quotas for entrance to HEIs
	Setting the stipends for all students
	Appointments of Rectors of HEIs
<b>MHSSE</b>	Supervising higher and secondary specialized education
	Approval of secondary legislation on improving the quality of education
	Consolidating annual budget bids prepared by HEIs
	Reallocation of annual budget funds (approved by the Ministry of Finance) between HEIs
	Organizing the academic year (length of semesters, examinations and holidays)
	Fostering international cooperation, which includes the establishment of joint HEIs and research work, as well as students and teachers mobility
<b>Ministry of Finance</b>	Determining tuition fees for all levels and specializations of HE
	Management of the Fund for Development of Material and Technical Base of HEIs
	Approval of consolidated annual budget of HEI
<b>Ministry of Economy</b>	Forecasting market demand for different sectors, which becomes the basis for setting admission quotas to HEIs (determined in consultation with MHSSE and MLSP)
<b>Academy of Sciences</b>	Conducting high level research and providing policy advice on research activities in HEIs
<b>Ministry of Labor and Social Protection (MLSP)</b>	Implementing training programs for employees to improve their professional skills
<b>State Testing Centre</b>	Developing and organizing national testing for admission to HEIs
	Organizing and conducting state accreditation of all HEIs
	Reviewing the State Educational Standards

52. The MHSSE lacks a management information system (MIS) for policymaking and planning. Within the MHSSE, the Department of Targeted Preparation and Distribution is in-charge of monitoring the graduates of all HEIs nationwide. This department collects data on graduates and employers through HEIs and stores these data in Microsoft Excel files. Each HEI monitors its young graduates by using their mentors from within university faculty, for five years after their graduation. This monitoring mechanism relies heavily on mentors of students, and its effectiveness is hampered by the lack of an MIS to store such a huge amount of data and produce quality information that can be used in subsequent decision-making. According to data from the State Committee of the Republic of Uzbekistan on Statistics, each year over 60,000 students graduate from HEIs in the country. Thus, collecting data on graduates, jobs, and employers through mentors is not a simple task.

### ***Uzbek HEIs have Restricted Autonomy in Several Key Areas***

53. International evidence suggests that the degree of autonomy that HEIs have is positively linked to their research performance and to better management of human and financial resources. The international trend to grant more autonomy to HEIs has been prompted by their need to adapt to a rapidly changing environment. As higher education systems become larger and more complicated, the greater the need to increase the autonomy of HEIs. In East Asian countries, the recent trend has been to move away from government-driven approaches and towards a government-steered model in which HEIs are more autonomous (World Bank, 2012b). A HEI with a high degree of autonomy usually has: (i) a management structure with a leadership team appointed according to professional criteria and an independent board with external representation; (ii) the freedom to set human resource policies (regarding the recruitment and retention of staff and the definition of salaries); (iii) academic autonomy; (iv) administrative autonomy (in terms of determining number of students admitted in different disciplines); and (iv) financial autonomy (in the generation and use of funds, including at least some flexibility in setting fees).

### ***Leadership and Management in Uzbek HEIs***

54. The Law on Education provides very little guidance on the management of HEIs. It says merely that the “management of educational establishments (is the responsibility) of its manager.” The Regulation on Higher Education issued by the MHSSE clarifies the role of the Rector and provides more details about his or her duties. A typical Uzbek HEI is headed

by a *Rector*, who is appointed at the discretion of the Cabinet of Ministers<sup>42</sup> and is assisted by five vice-rectors responsible for academic affairs, economics and finance, scientific work, social and culture affairs, and the supervision of colleges and lyceums. The Rector is also responsible for ensuring that the teaching process is in accordance with the State Educational Standards and for the supervision and methodological guidance of academic lyceums and professional colleges established within the HEI. The Rector also implements staffing procedures, establishes chairs and departments according to the administrative framework, authorizes financial transactions, defines staff work bonuses, and establishes the internal rules of the HEI.

55. In order to discuss management, organization and research issues each HEI establishes an *Academic Council*. The Council includes the rector, vice-rectors, deans of faculty, heads of departments, and chairs. The Rector is the head of the Academic Council. The Academic Council can make decisions on all issues regarding the organization of study, teacher in-service training, and cooperation with partner institutions. The Academic Council also hears presentations of research outcomes, gives recommendations to publish scientific works, nominates candidates for scientific awards, and awards personal merit based stipends to students and titles of honor to academic staff. The decisions of the Academic Council come into force only after they have been approved by the Rector.

56. The Regulation on Higher Education also mentions that HEIs can establish a *Board of Trustees* that includes representatives of founders, business partners, civil society activists, and government. The regulation does not provide any description of the responsibilities of the Board of Trustees and does not specify how it should communicate with the Academic Council and the Rector. Both the Board of Trustees and the Academic Council are advisory bodies, whereas the decision-making authority rest finally with the Rector, who is appointed solely at the discretion of the Cabinet of Ministers.

#### *Freedom to Set Human Resource Policies in Uzbek HEIs*

57. The Cabinet of Ministers establishes the State requirements for the qualifications<sup>43</sup> and pay scales for university teachers and the procedures of hiring and dismissing teachers in all HEIs. However, within the guidelines set by the Cabinet of Ministers, each HEI manages the hiring and firing of its staff in accordance with the labor laws of the country. All vacancies are supposed to be advertised in the media and to be subject to open competition

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<sup>42</sup> The MHSSE nominates potential Rectors for the consideration of the Cabinet of Ministers.

<sup>43</sup> Decree Number 25 of February 16, 2006 amended by CoM Decree #183 of June 20, 2011.

from all candidates meeting the State requirements. Teachers are usually hired on five-year contracts and are subject to rehiring through competition at the end of that period.

58. The salaries of the teaching and management staff of HEIs are based on regulations issued by the Cabinet of Ministers.<sup>44</sup> According to these regulations, academic staff consists of a basic salary, supplements, and bonuses. The size of the basic salary depends on the staff position in question and the highest academic degree achieved by the successful candidate. The salaries of management staff (the Rector, vice-rectors, faculty deans, and deputy deans) depend on the size of the HEI.<sup>45</sup> While salaries will be discussed in detail in the section on financing, it is worth mentioning that the average teacher salary per sector is less than US\$500 monthly. This is almost equal to the average wage in Uzbekistan as a whole.

#### *Academic and Administrative Autonomy*

59. Courses of study are subject to State Education Standards, which are approved by the MHSSE<sup>46</sup>. The SES for each field is developed by a designated lead university (identified by the MHSSE in consultation with experts). However, HEIs have very little flexibility in curriculum management. In fact an HEI may introduce changes into the standard curriculum only up to 5 percent of the total instructional time. In addition, the SES makes very little provision for optional subjects as 95 percent of all subjects are mandatory. This precludes the possibility of having a double major (or a major and minor) as is the norm in US universities. To acquire additional qualifications, students must complete one degree and only then apply for another. When they apply for another degree, the admission

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<sup>44</sup> Regulation on the remuneration of higher education academic staff. Annex 4 to CoM Decree #164 of August 1, 2008

<sup>45</sup> The conditions for non-academic staff are defined by the standard provisions for management, technical, and support staff of HEIs approved by joint decree of the MHSSE (# 485/1), Ministry of Labor (#200-KK), and Ministry of Finance (#107) of December 15, 2010. This document provides a detailed description of some 150 different positions. Staffing norms for these positions depend on the number of students, the size of buildings and facilities, and the number of units to be served.

<sup>46</sup> The academic autonomy of universities is limited in many respects. Even the manner in which individual course grades are calculated is stipulated by ministerial decree. According to MHSSE decree #1981 (July 10, 2009), 70 percent of each student's course grade must come from the results of current and midterm assessments, with the remaining 30 percent being derived from a final assessment. Changes to this formula for individual faculties and HEIs are also set by decree. For example, MHSSE decree #1981-2 (December 13, 2013) introduces an alternative grading scheme for students of the Tashkent State Institute of Law, which allocates 30 percent of the course grade to current assessments, 20 percent to mid-term assessments, and 50 percent to final assessments.

committee may take into account their previous higher education degree and reduce the overall duration of their study for the subsequent degree.

60. HEIs in Uzbekistan are required to follow the admission quota established each year by the Cabinet of Ministers and endorsed through a presidential decree outlining the exact intake for each university and each profile or specialty. Universities lobby the MHSSE to increase their overall intake and to introduce new programs, but the final decision rests with the Cabinet of Ministers. The parameters governing the intake numbers can vary substantially from year to year with the Ministry of Economy, in consultation with the Ministry of Labor and Social Protection, playing a leading role in determining the student enrolment proposal each year. The proposal is drawn up by the MHSSE based on an analysis of demand for new specialists compiled by ministries and regional governments and within the framework of development and investment programs. Imperfect information and the rapidly changing requirements of the labor market have resulted in a structural over-supply of educators and under-supply of engineers, for example. HEIs have little flexibility in setting either enrolment or fees as both are determined for them by the central ministries as is discussed in the access section above.

61. Finally, reportedly university students and teachers are required by local authorities to assist in cotton-picking during the harvesting season, as a form of community service. The universities have little autonomy to determine whether they would like to participate in this activity. International media and CSOs allege that forced labor takes place under the guise of community service, and that in spite of the fact that Republic of Uzbekistan has signed and ratified several International Labor Organization conventions related to child and forced labor, the enforcement of these conventions, as well as of existing national laws reflecting international agreements, continues to be a challenge.<sup>47</sup> It is important to recognize that community service forms part of higher education training in many countries, but that such service is an explicit part of the curriculum and often linked to the course of study of the students (See Box 5 for an example from Mexico).

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<sup>47</sup> Uzbekistan has ratified the following conventions: Convention no. 138 on Minimum Age for Admission to Employment, Convention no. 182 on Worst Forms of Child Labor, Convention no. 29 on Forced Labor, and Convention 105 on Abolition of Forced Labor. In addition, the International Covenant on Civil and Political Rights (ICCPR), also subscribed by the Government, prohibits forced labor (article 8). However, the enforcement of these conventions, as well as of existing national laws reflecting international agreements, continues to be a challenge and international community, media and CSOs consistently point out that Uzbekistan has been mobilizing youth and university students and teachers for cotton harvesting.

### **Box 5: Mandatory Community Service for Tertiary Education Students - The Case of Mexico**

In Mexico, all tertiary education students in both public and private institutions must spend 480 hours of social or community service as a requirement for graduation. The main goal of this program is to foster more social awareness of its students. Such a program helps to complement the academic preparation of future graduates, with an understanding of the necessity to be socially responsible.

Such a program serves several purposes:

- a) It helps students - as beneficiaries of the social investment made in them - to “give back” to the community.
- b) It provides students with “real-life” experience that will help them to acquire necessary knowledge complementing the academic preparation obtained inside the classroom.
- c) It helps students to become more sensitive to the needs of the community.

In order to become successful, the mandatory social service program is implemented at the institutional level in such a way that the experiences acquired in the program are considered as part of the curriculum of the academic programs. It is critical that participating institutions ensure that the program serves its intended purposes and that the students are not exploited as “cheap labor” for work.

The Social Service for Tertiary Education Students Program in Mexico has a significant impact on regional development when it is linked to the needs of the region. It helps to foster collaboration among institutions - universities, schools, government entities, community-based organizations, and the business sector - on joint projects with direct involvement of students.

*Source:* Authors.

## *Financial Autonomy*

62. As explained earlier, every year the Cabinet of Ministers determines the number of HEI places to be filled in each discipline. All HEI spaces are open to applicants on a competitive basis via the entry testing system administered by the STC. One-third of all HEI spaces are funded through State grants (which exempt successful applicants from paying fees). The State grants are awarded according to how well students perform in the entry testing system. Applicants with lower tests scores are allowed to enroll if they sign fee contracts that commit their families, firms or organizations to paying their tuition fees. The Ministry of Finance determines the value of tuition fees at the beginning of each academic year. At present, the average tuition fee for a state HEI is around US\$1,400 per year (in comparison with an annual fee of around US\$4,400 for the Turin Polytechnic University in Tashkent, a public-private partnership). At present, the State funds around 38 percent (down from 49 percent in 2007) of the HEIs' expenditures, and the non-budgetary funds generated by the HEI cover the remainder. This is discussed in greater detail in the section on financing.

63. In general, HEIs have more flexibility in using self-generated funds than funds made available through the budget. The HEIs also have an incentive to generate revenues because all revenue raised by HEIs is exempt from income tax as long as those funds are used for the modernization and development of their infrastructure. In many countries, the commercial activities conducted by HEIs (such as bespoke short courses for industry, research and consulting services, knowledge transfer, and copy rights) make considerable contributions to their revenue. However, there is little evidence of such services being provided by Uzbek HEIs, and an overwhelming majority of self-generated funds come from tuition fees paid by or on behalf of contract students who make up two-thirds of all enrolment.

### **C. Quality Assurance in Tertiary Education**

64. The Cabinet of Ministers of the Republic of Uzbekistan and the State Testing Center are key organizations responsible for quality assurance for Uzbekistan's tertiary education sector. The Cabinet of Ministers is responsible for establishing and reorganizing HEIs, defining licensing procedures, and approving the State Educational Standards as well as the quality assurance procedures and outcomes for HEIs and their programs. The STC, which reports to the Cabinet of Ministers, is responsible for organizing and

conducting state accreditation of all educational establishments in the country. The third key institution is the Ministry of Higher and Secondary Specialized Education, which is responsible for regulating student assessment. Finally, each HEI is responsible for its own internal quality assurance. In order to enable the Uzbek higher education system to serve its student population well, the quality assurance system should be compliant with global best practices while remaining locally relevant. Historically, strong higher education and centrally planned economic practices as developed during the Soviet era have underpinned the existing system in Uzbekistan. However, the realities of modern economic development—both locally and globally—are putting pressure on the country’s universities and other post-secondary education providers to adapt in order to produce both graduates and research/knowledge relevant to the development needs of the country. This section will highlight trends in global quality assurance regimes, summarize the existing quality assurance norms that are in place in Uzbekistan, list the main challenges currently facing the system, and offer suggestions for areas where innovations and improvements in the quality assurance regimes are likely to have the best and most lasting impact.

### ***Trends in Global Quality Assurance***

65. An internationally acceptable quality assurance system is required to ensure that higher education institutions (universities and all other forms of post-secondary institutions) and programs satisfy at least a minimum level of quality. This is necessary in order to protect students, improve all institutions and programs at all levels, promote comprehensive quality investments in academic components, administrative components, and infrastructure, encourage institutions to develop their own internal quality culture, and fulfill the HEI’s obligations at a reasonable cost, which should not exceed the estimated benefits of the quality improvements.

66. Today, the most modern quality assurance regimes consist of a two-stage process: (i) an internal self-evaluation performed by the HEI in question and (ii) an external peer review performed by an autonomous and independent agency. Globally, these new norms for evaluating higher education have become pervasive across all regions as the shifting responsibilities for higher education management and the balance between autonomy and accountability promote greater levels of institutional independence coupled with stronger requirements for comprehensive and rigorous quality evaluations and assessments.

67. Most modern quality assurance processes begin with a self-evaluation conducted by a team assigned by the institution or program being evaluated. The self-evaluation provides the institution or program with an opportunity to undergo a thorough examination of its own practices (including internal quality assurance procedures and management), resources, and capacity to achieve its mission that can highlight areas in which it can and should seek to improve. The team carrying out the self-evaluation produces a report that documents both the process and the findings.

68. Following the institutional self-evaluation, modern best practices in quality assurance require that this should be reinforced by the appointment of a panel of external peer reviewers, preferably including international experts, to assess the information provided in the self-evaluation report and conduct a review of the operations of the institution. The panel of external reviewers must be independent of the institution and the government and must use a template for the assessment that is agreed upon ahead of time by all stakeholders in the process. In the majority of systems, the template for assessment is pre-determined and is publicly available. Then the findings of both the self-evaluation and those of the peer review panel are combined to create the final quality assurance report for the institution.

69. These modern quality assurance norms use the mission statement of the institution that is being evaluated as the benchmark against which to assess whether the institution is achieving its aims. This practice has moved quality assurance away from an ambiguous institutional model as defined by a regulatory agency and has created a more concrete, relevant, and realistic basis for assessing the effectiveness of an institution. This approach has become increasingly necessary and important as systems have become more complex. Therefore, the framework that stakeholders should use to assess the quality of an institution or program ought to include such criteria as excellence, fitness for purpose, and overall relative improvement.

## Box 6: The Bologna Protocol

The Bologna Protocol provides an excellent framework for understanding the current state of the art of quality assurance in Europe and Central Asia. The spirit of the Bologna process places the universities at the center, making them autonomously responsible for the delivery of high quality academic and research programs. Quality is assured through an externally managed quality assurance system that operates independently of the government and is itself independently accredited and recognized. Originally established to deal with the plethora of incompatible degree programs offered by different countries in Europe and to harmonize the higher education programs being offered, it has evolved into a unified framework for the delivery and assessment of academic and research programs in 47 countries. The Bologna agreement of 1999 focused on five key issues:

- a. Adoption of a system of easily readable and comparable degrees, which subsequently led to the establishment of a diploma supplement
- b. Adoption of a two-cycle Bachelor/Master system of education, which was subsequently extended to a three-cycle system including the PhD
- c. Establishment of the European Credit Transfer and Accumulation System (ECTS) to promote student mobility
- d. Promotion of European cooperation in quality assurance, which resulted in the development of European Standards and Guidelines (ESG) and the establishment of the European Quality Assurance Register (EQAR)
- e. Promotion of the European dimension in higher education, which has resulted in the European Higher Education Area (EHEA) of which Kazakhstan is the latest member.

Internationalization has led to the closer integration of economies around the world and a greater mobility of specialists and experts. The vastly different standards of education in different countries and the consequent variation in the quality of graduates has meant that each country had to collect vast amounts of data to be able to assess the type and quality of education offered by institutions in other countries of the world, a system that for obvious reasons became unmanageable. The introduction of the Bologna Protocol changed all of that by requiring that, in addition to the legal mandate of the entity awarding the degree, the quality assurance system of that country must be adequate. The ESG underpin the system and refer to “a common European set of principles and reference points for quality assurance of higher education” that were adopted in 2005 by the Bologna Process ministerial summit in Bergen (Norway). The ESG provide three sets of standards for quality assurance policies and procedures: (i) for internal quality assurance; (ii) for external quality assurance; and (iii) for the operation of the external quality assurance agencies.

Quality assurance agencies that “substantially comply with a common set of principles for quality assurance in Europe” as enshrined in the ESG are listed in a register known as the EQAR. The EQAR was established in 2008 as an additional mechanism for coordinating national efforts across the European Union and beyond to improve quality assurance and increase cross-border mobility of workers with higher education degrees. The registry offers an ever-expanding list of national and regional accreditation agencies that comply with the ESG. This list can be especially useful for developing systems, like the Uzbek system, in that it provides them with easy access to experts who can inform and support the comprehensive development of both the quality assurance regime and individual institution or program reforms and improvements.

70. The expanded use of self-evaluation by the HEI and independent peer review coordinated by an independent and autonomous Quality Assurance Agency (QAA) has been accompanied by a diminished role for higher education ministries or agencies that manage the higher education system but do not specifically intervene in quality assessments<sup>48</sup>. In reality, these ministries still monitor quality or perceptions of quality as they make decisions about funding, which provides avenues for state interventions even as the formal QA regime becomes more institutionally-driven (by the HEIs and QAA). These elements of modern QA regimes as described above are the norm in most modern, developed QA systems today but differ in execution, depending greatly on the culture and historic relationship between institutions, the government, and relevant stakeholders, such as students and the labor market.

### ***Current Quality Assurance Norms in Uzbekistan Fall Short of International Best Practices***

71. The quality assurance system in Uzbekistan is in transition.<sup>49</sup> It is attempting to move away from a centrally directed system focusing on the measurement of inputs<sup>50</sup> towards the Bologna system (see Box 6), with the introduction of a three-cycle education system and the adoption of the European Credit Transfer and Accumulation System. Much more work remains to be done as the universities are still mostly governed by government ministries and have only limited freedom to tailor their programs to the needs and requirements of the Uzbek economy. The rest of this section will focus on the key features of the quality assurance system in Uzbekistan namely, the State Education Standards, the student admissions and assessment system, teaching quality assessment, the attestation and Accreditation of HEIs (including the recent decree on implementing a ranking regime).

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<sup>48</sup> Such involvement of the ministries is focused on the initial granting of authorization for HEIs to operate, and usually based on a minimum set of criteria.

<sup>49</sup> As a member of the Soviet Union's centrally planned economy, the Uzbek higher education system operated under the direct control of Moscow, which took complete ownership of all aspects of academic programs at the universities, including the quality of graduates. Higher education institutions executed State policy, met the standards set, and were provided with the funding and support required to meet these standards. In essence, the production of a graduate of high quality was the responsibility of the State that directly exercised control over most aspects of university management. With the independence of Uzbekistan in 1991, the system of higher education remained unchanged, with the Government of Uzbekistan in Tashkent now taking on the central role previously exercised by Moscow, albeit with significantly fewer resources at its disposal.

<sup>50</sup> Such as the number of hours taught, adherence to state education standards, faculty qualifications, and the availability of computers to a more output-based system focusing on student assessments of teacher quality, the rate of graduate employment, and employer surveys.

## *State Education Standards*

72. Like much of the former Soviet Union, Uzbekistan currently has a state-centered quality assurance system that is based on the State Education Standards<sup>51</sup> that establish the basis for the quality of higher education. The SES, developed and approved by the MHSSE, specifies the requirements not only for Bachelor's and Master's degree programs but also for each specific professional education field. They also define the requirements for the higher education degree in each field, including, "the structure, content, and implementation of curricula, quality control of personnel training, compulsory (core) components (the list of academic subjects), learning outcomes, and descriptions of competencies."<sup>52</sup> The HEIs have little flexibility in curriculum management and may introduce only a 5 percent change in the standard curriculum. The SES also have essentially no provision for optional subjects and do not allow for double majors or the possibility of having majors and minors.<sup>53</sup>

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<sup>51</sup> State Standards for Higher Education, General Provisions, Annex 1 to Decree of the Cabinet of Ministers # 343, August 18, 2001

<sup>52</sup> European Commission (2012)

<sup>53</sup> As an example, in the case of the Bachelor's degree, the overall requirements specify that the duration of study should be at least four years or 204 weeks. The maximum workload should not exceed 54 hours a week including 36 contact teaching hours. There is, thus, no difference between university-level and school-level study in terms of contact hours in Uzbekistan. In comparison, US norms at the university level are for 16 hours of classroom study and an additional 6 hours of laboratory work in the case of scientific subjects, which provides for substantial self-learning opportunities for students. The normative allocation of learning time in Uzbekistan is 65 to 70 percent spent on theoretical sessions, 9 to 10 percent on testing, 6 to 8 percent on practice, 2 to 3 percent on the final thesis (course work), and the remaining 13 to 16 percent on vacation. In total, 7,344 hours should be devoted to education, including 4,896 contact hours with teacher and 2,448 self-learning hours. State testing of students includes examinations on Civics and Foreign Language and the presentation of the student's final course work. The SES require the duration of the Master's degree to be at least two years or 100 weeks with a maximum learning workload that may not exceed 54 hours a week including 36 contact hours. Theoretical studies should take 30 to 40 percent of total time, while scientific research should take 40 to 50 percent. Testing should take 4 to 7 percent, and vacations 13 to 16 percent. The syllabus plan envisages a total of 4,212 hours of inputs, including 2,808 contact hours and 1,404 self-learning hours. The time allocated for scientific research should be distributed as follows: research 53 to 57 percent, education 22 to 28 percent and preparation of the Master's dissertation 19 to 21 percent. In the case of Master's degree programs in Machinery and Technology of Welding, for example, the program consists of 20 subjects including 12 general and 8 special subjects. State testing of students includes exams on the Philosophy of Science, the student's special subject (Major), and the presentation of the Master's dissertation.

### *Student Admissions and Assessment System*

73. As also discussed earlier, overall enrolment and annual admission quotas for each discipline and HEI are established each year by the Presidential decree, on advice from the Cabinet of Ministers. Students applying to enter the university in any discipline are selected by means of a national entry test conducted by the State Testing Center. The STC organizes the national admission test for enrolment to HEIs on one day in early August for the entire country. Each student has the right to apply to only one university and for only one discipline within the university. There is no second choice or second chances in a given year for students to apply to another similar university with their national admission test scores, which means that, if a student fails to gain admission to the chosen department, then he or she has to wait for an entire academic year, at a minimum, to apply elsewhere.

74. All students of Uzbekistan's HEIs in any subject area are assessed annually on a 100-point scale in terms of their knowledge, skills, and abilities relative to the State Educational Standards. The students' scores determine their rankings as Excellent (more than 86 marks), Good (71 to 85 marks), Satisfactory (55 to 70 marks), or Fail (less than 54 marks). The regulation adopted according to Minister Order #204 on October 11, 2009 governs the student assessment methodology. Each student's score is obtained by combining different assessments of his or her work including oral questioning, a multiple choice test, a discussion, a written assessment of class assignments, and written homework as well as final examinations. Students that receive a failing score are given an opportunity to improve their score and may not progress to the next phase of their degree until they have obtained a satisfactory score.

75. The score received by the student has a direct impact on the size of the student's stipend.<sup>54</sup> A student who achieves an excellent grade receives 100 percent of the stipend, a student who achieves a good grade receives 75 percent of the stipend, and a student receiving a satisfactory grade receives 50 percent of the stipend, while a failing student receives no stipend at all. The normative size of stipend is established by the government on an annual basis and changes together with the size of the minimum wage. Each university has a department responsible for monitoring of student progress, which regularly produces analytical reports on student achievement for the university management and the MHSSE.

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<sup>54</sup> Instruction on stipends for students of HEIs. Approved by joint Decree of MHSSE # 2-P and Ministry of Finance # 43, March 10, 2004.

## *Teaching Quality Assessment System*

76. Prior to the start of the academic year, each teacher in an HEI is required to develop an individual work plan that indicates the activities to be performed and outcomes to be achieved. The total normative annual workload should be 1,540 hours<sup>55</sup> distributed among five areas: (i) the delivery of training; (ii) the development of training materials; (iii) scientific research; (iv) organization and management activities; and (v) civics and the moral upbringing of students. The main part of the workload is devoted to teaching, and each category of teaching staff has a recommended distribution of contact teaching hours. On average, professors and associate professors are required to have approximately 20 hours a week of contact teaching, while senior teachers and teachers are required to have approximately 25 contact hours per week. In comparison, most active researchers at US universities teach one course a semester or have only three contact hours per week.

77. These individual plans are reported to the Department of Monitoring under the office of the Rector. During the academic year, the implementation of individual faculty plans is monitored by the head of the department. The quality of the lectures is monitored and assessed using open lessons and peer review. The department head also prepares a plan for each faculty member to deliver open lessons with demonstrations of best practices and student research outcomes. Peer reviewers assess these open lessons in terms of their content, methodology, assessment, student performance, and compliance with the SES. Specialists in a particular field may choose to deliver open lessons to their colleagues in the faculty meeting, including the presentation of scientific problems and results of their research. The reviews of the open lessons are then reviewed by the department head.

78. One of the main indicators of teacher quality is the scores obtained by the students in the annual assessment. By the end of the academic year, each faculty member is required to prepare a report on the implementation of his or her individual plan. In parallel, the performance of every teacher is assessed through anonymous survey of students. The results of the implementation of annual plans are accumulated in a Teacher Rating System to produce a score for each faculty member. The threshold score of 1,540 determines if a faculty member will be recommended for promotion and a salary supplement or if the faculty members' contract will be terminated.

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<sup>55</sup> Regulation on the remuneration of HEI staff. Annex 4 for Cabinet of Ministers Decree # 164, August 1, 2008.

## *Attestation and Accreditation of HEIs*

79. The procedure for the attestation and accreditation of universities is regulated by the Decree of the Cabinet of Ministers,<sup>56</sup> the Regulation on Attestation,<sup>57</sup> and the Instruction on Criteria and Technology of Attestation.<sup>58</sup> The State Testing Centre, which falls under the oversight of the Cabinet of Ministers, is authorized to undertake a review (state attestation procedure) of all educational establishments in Uzbekistan regardless of their status or type of ownership. For the review of each university, an Attestation Commission is formed by the STC consisting of leading researchers and scholars from universities, the Academy of Science, and research institutes, MHSSE staff, and relevant industry/sector representatives. Members of the Attestation Commission may not be staff members of the university that is going to be attested. The head of the Attestation Commission is normally a staff member of the STC.

80. Attestation is the process of assessing the educational establishment with the objective of determining whether the content, level, and quality of personnel training is in line with the SES. The attestation report is presented to the Cabinet of Ministers, which grants the status of accreditation to those educational establishments that meet the requisite standards. State accreditation is the recognition of the educational establishment's compliance with the criteria and requirements laid down in the SES. It grants the institution the right to issue an educational certificate of the approved national format to the graduates of the establishment.

81. The universities pass through total attestation once every five years and are assessed on 13 criteria: (i) the implementation of the State Educational Standards; (ii) the level of student knowledge; (iii) the quality of teaching staff; (iv) research activity; (v) the availability of textbooks and training materials; (vi) the quality and quantity of property and equipment; (vii) ICT usage; (viii) industrial links; (ix) scientific degree programs; (x) partnerships with TVET and upper secondary education institutions; (xi) civics and moral upbringing; (xii) employment of graduates; and (xiii) international partnerships.

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<sup>56</sup> This is a decree regarding the improvement of activities of the State Testing Center. Decree of CM of Uzbekistan #293, June 24, 2004.

<sup>57</sup> Regulation about the procedure governing State accreditation of educational establishments. Annex 1 to Decree of CM #21, February 10, 2006

<sup>58</sup> Instruction on the criteria and technologies governing the attestation of educational establishments. Decree of STC #01-193, MHSSE #173, and MPE #25, June 12, 2008.

82. The regulation on attestation clearly states that the subjects of attestation are educational majors or specialties. Every specialty is assessed with regard to the 13 parameters listed above. If fewer than 67 percent of specialties manage to attain attestation, the HEI is not accredited. If 67 to 75 percent of all specialties attain attestation, then the university is considered as being conditionally accredited. An HEI is considered to be accredited if at least 75 percent of its specialties successfully attain attestation.

### *Decree on University Rankings*

83. Recent changes to the law have very deliberately moved beyond the attestation and accreditation of HEIs to introduce elements of a modern quality assurance system. Decree No. 371 by the Cabinet of Ministers in 2012 not only laid the foundation for the introduction of a university ranking system in the country but also signaled a paradigm shift in the assessment of quality. It did so by focusing on output-based indicators as opposed to the input-based criteria that had hitherto been used. The decree aimed "...to facilitate improvement of quality of scientific and teaching activities of the national higher educational institutions and to help them achieve high indicators of using the scientific capacity of the faculty, ensuring quality of teaching and producing highly qualified specialists, demanded by the real economy sectors, according to the international criteria and standards, as well as enhancing international cooperation in the field of education."

84. Under the decree, the responsibility for ranking of universities was assigned to the State Testing Center, which was also tasked with preparing more detailed criteria for this ranking. The results of the ranking exercise are now required to be disseminated widely through the media by March of each year. Since the primary objective of the ranking exercise is to improve the quality of scientific and teaching activities measured according to international criteria and standards, it is important to understand the distribution of points in the ranking system developed by the STC. According to this system, the ranking score is obtained from four major areas:

- a. 35 percent for the assessment of teaching quality as measured by faculty qualifications, student surveys of teaching quality, textbook publications by faculty, the share of foreign students and faculty, exchange programs, training, and ICT usage.
- b. 20 percent for the assessment of the university's graduates determined through employer surveys, the percentage of graduates

- employed within six months of graduation, and international prizes won by students and graduates.
- c. 35 percent for the level of research activity as measured by the number of publications and their citations, PhD output, research revenue, and competitive funds obtained for research.
  - d. 10 percent for other factors including the availability of information, ICT usage, Internet presence, and links to schools. The first ranking exercise has yet to be undertaken by the STC, which is preparing to collect information for this purpose.

#### **D. Higher Education Financing**

85. In Uzbekistan, publicly reported expenditure in education as a proportion of GDP, at around 8 percent, is the highest in Central Asia. Tertiary education's share of the total education budget has declined from 10 percent in 1990 to around 5 percent now. This compares poorly with most other countries where around 20 percent of the public education budget is generally spent on tertiary education. Yet Uzbekistan's spending per student is very high relative to its per capita income. Nevertheless it is important to discover the reason why, for a country which spends around 8 percent of its GDP on education, tertiary education gets such a small share. Is this optimal?

86. A new per capita financing mechanism for higher education was introduced in 2010 by a joint decree of the Ministry of Finance and the MHSSE.<sup>59</sup> It replaced the old financing rules, which funded universities based on historical allocations based on numbers of staff, assets, and students. The new mechanism provides public funding directly from the Ministry of Finance to HEIs on the basis of the number of students enrolled under the State grant quota. The level of public funding available to HEIs is determined on the basis of the number of enrolled students (with additional funding for orphans and disabled students) and a series of per-student funding coefficients and compensatory coefficients. The exact level of these coefficients (or "normatives") is set each year for each HEI by a joint MHSSE and Ministry of Finance decree.

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<sup>59</sup> Joint decree of the Ministry of Finance (#67) and the MHSSE (#329) "On the approval of provisions of regulatory planning and financing of the expenditures of higher education institutions from the budget based on the cost per student." August 20, 2010.

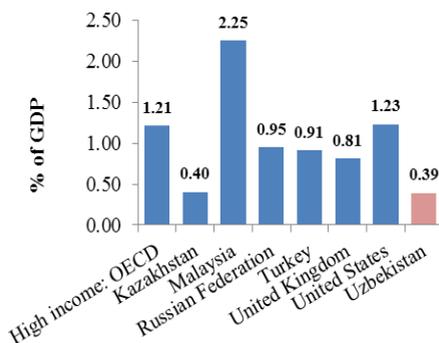
### *Public Spending on Tertiary Education is Low in International Terms*

87. In 2011, the amount of public financing allocated to higher education in Uzbekistan was 0.39 percent of GDP. This low level of funding, accounting for approximately 5 percent of the total education budget, was in sharp contrast to more generous levels of funding in most comparator countries. In Russia and the high-income countries of the OECD, for example, government funding of higher education is 0.9 and 1.2 percent of GDP respectively, and in both cases, higher education accounts for 23 percent of the overall education budget (Figure 19).

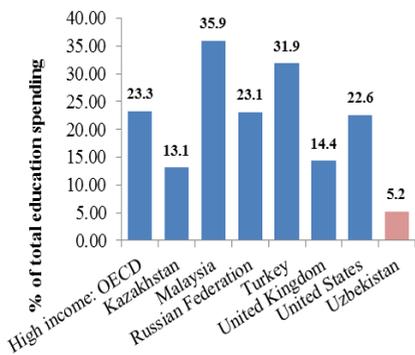
88. Low levels of public financing in Uzbekistan are linked to low enrolment rates in the higher education sector. The fact that Uzbekistan's tertiary enrolment rate is eight times lower than in Russia and the OECD and four times lower than in Kazakhstan partly explains why spending per student is high in relation to the country's per capita GDP. A generous system of student stipends (discussed below) is another reason for the country's relatively high costs per student. However, at US\$644, Uzbekistan lags far behind other countries in the absolute amount of public spending allocated for each student in higher education. Even after adjusting for purchasing power, Uzbekistan's level of public investment is still two times lower than Russia's, three times lower than Turkey's, and seven times lower than Malaysia's.

**Figure 19: Public Spending on Tertiary Education in Uzbekistan and Comparator Countries**

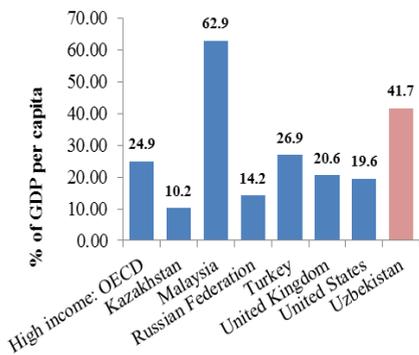
*(a) Share of GDP*



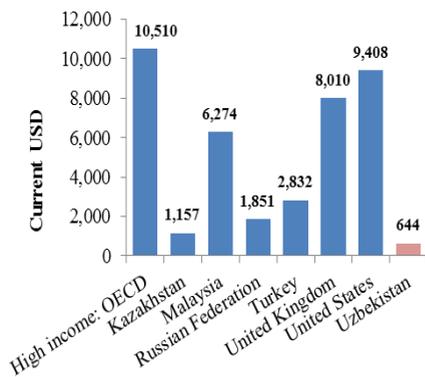
*(b) Share of total public spending on education*



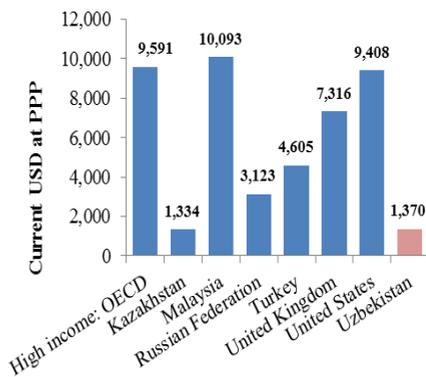
*(c) Per student as a share of per capita GDP*



(d) Per student in current US\$



(e) Per student in current US\$ at PPP



Sources: World Bank staff calculations based on data from Uzbek authorities, OECD (2012), and the World Bank EdStats database.

Notes: Expenditure data are from 2011 for Uzbekistan and for 2009 or the latest available year for comparator countries.

*There has been more private financing of higher education in recent years*

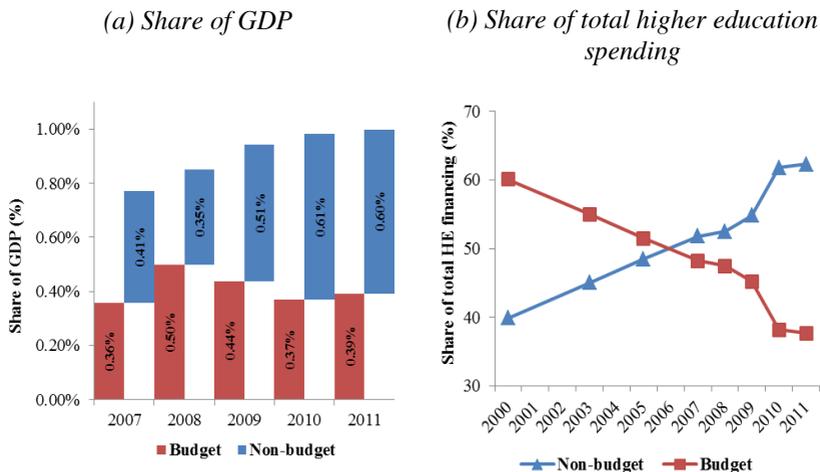
89. Since 2000, the share of State budget funds has declined from 60 percent of total higher education financing to less than 38 percent. The proportion of students enrolled on a State grant basis has followed a similar downward trajectory, reaching a low of 35 percent in 2010/11. According to Presidential Decree #1533, the share of budget-funded students should fall to 33 percent by 2015/16, thus further decreasing the sector's reliance on public funding.<sup>60</sup>

90. As the amount of State resources for higher education has dwindled, the system has become increasingly financed by student tuition fees. Of the 1 percent of GDP going to higher education in Uzbekistan, 0.6 percent comes

<sup>60</sup> Decree of the President of the Republic of Uzbekistan (#1533) "On the measures for strengthening the material and technical base of the higher educational institutions and cardinal improvement of the quality of preparation of high-qualified specialists." May 20, 2011.

from non-budget sources, a nearly twofold increase over three years (Figure 20). While some non-budget funds are derived from the various commercial activities of universities, this share remains small. The vast majority of own-source revenue raised by Uzbek universities comes from student tuition payments.

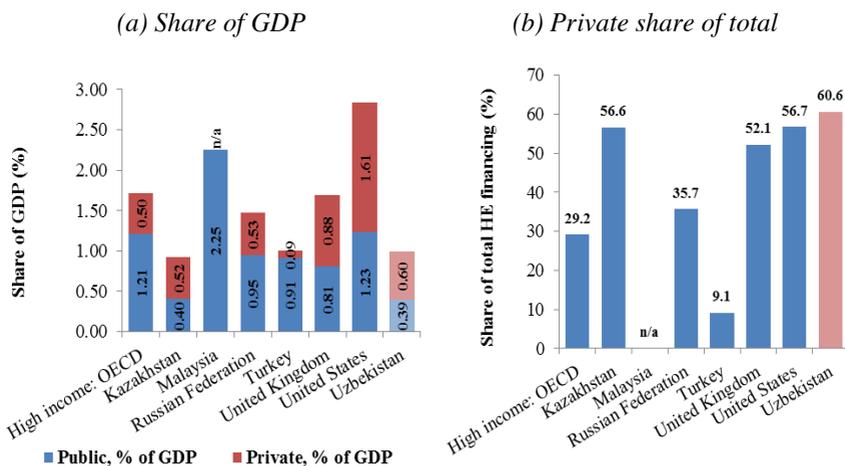
**Figure 20: Public and Private Financing of Higher Education in Uzbekistan**



Sources: World Bank staff calculations based on Ministry of Finance and MHSSE data

91. The speed and magnitude of the recent shift toward greater private financing, the result of a policy decision by the Uzbek authorities, has put the country out of line with many international comparators. Uzbekistan’s students are now expected to contribute a greater share of the system’s revenues than students in much wealthier countries. The share of private financing (in excess of 60 percent of the total) is higher than the corresponding shares in the United States (57 percent) and United Kingdom (52 percent), two rich countries whose higher education systems rely to a large extent on private payments. The average level of private financing of higher education in the high-income OECD countries is a mere 29 percent, while in Turkey and Russia these shares stand at 9 and 36 percent respectively (Figure 21).

**Figure 21: Public and Private Financing of Higher Education in Uzbekistan and Comparator Countries**



Sources: Uzbek authorities, OECD (2012), and World Bank EdStats database.

Notes: Expenditure data are from 2011 for Uzbekistan and for 2009 or the latest available year for comparator countries. N/a = not available.

### *Tuition fee levels have risen sharply for contract students*

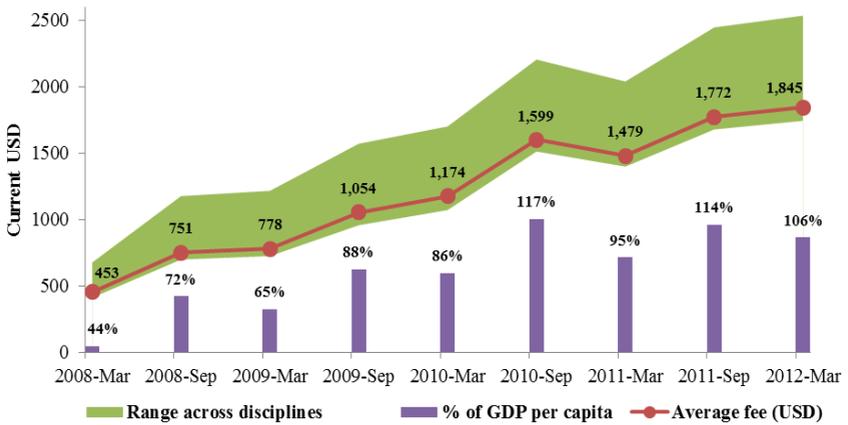
92. The increasing amount of private financing for higher education has been the result of a combination of more students self-financing their education and the growth in student tuition fees. Between 2008 and 2012, the average size of the student contract increased fourfold—from US\$453 to US\$1,842 (Figure 22). While Uzbekistan’s economy and the level of well-being of its people has also grown in recent years, the increase in contract fees has far outpaced overall economic growth. The average contract size as a share of per capita GDP has increased from 44 percent to more than 106 percent over five years. Meanwhile, tuition fees at public universities in most OECD countries range from zero to 24 percent of per capita GDP.<sup>61</sup>

93. The level of tuition fees, set annually by a decree of the Ministry of Finance, also varies significantly between disciplines. The majority of students—those enrolled on contract basis in agriculture-, industry-, and

<sup>61</sup> OECD (2012)

education-related fields (which together account for three-quarters of all students)—had to pay an annual tuition fee around US\$1,700 during the 2011/12 academic year. Meanwhile, contract students enrolled in law faculties had to pay the highest fee – around US\$2,500 per year (Table 5).

**Figure 22: Average Annual Tuition Fee for Contract Students (Bachelor’s Degree) in Uzbekistan**



Source: World Bank staff calculations based on Ministry of Finance data

**Table 5: Annual Tuition Fees for Contract Students (Bachelor’s Degree) in Uzbekistan, by Discipline**

(US\$)	2008 - Mar	2008 - Sep	2009 - Mar	2009 - Sep	2010 - Mar	2010 - Sep	2011 - Mar	2011 - Sep	2012 - Mar
Law	676	1176	1216	1571	1701	2205	2040	2448	2536
Economy	574	949	984	1264	1418	1953	1807	2168	2272
Health	575	911	943	1298	1449	1953	1807	2168	2272
Art and cinematograp hy	533	911	943	1230	1355	1764	1632	1958	2034
Construction	507	797	827	1093	1229	1638	1515	1818	1902
Transport	474	759	786	1093	1197	1638	1515	1818	1902
Communicati on	478	797	827	1093	1229	1638	1515	1818	1902
Agriculture	422	698	724	956	1071	1512	1399	1679	1744
Industry	457	721	745	1025	1134	1512	1399	1679	1744
Physical culture and sport	444	721	745	956	1071	1512	1399	1679	1744
Education	411	698	724	991	1103	1512	1399	1679	1744
<b>Average</b>	<b>453</b>	<b>751</b>	<b>778</b>	<b>1054</b>	<b>1174</b>	<b>1599</b>	<b>1479</b>	<b>1772</b>	<b>1845</b>

*Source:* Ministry of Finance

*Notes:* Average is weighted by student enrolment in the respective disciplines. Exchange rate (UZS/US\$): 2008 = 1317.64; 2009 = 1463.81; 2010 = 1587.12; 2011 = 1715.81; 2012 = 1892.40.

94. Growth rates in tuition fees have been largely uniform across the disciplines, though they have grown slightly faster for the lower-cost disciplines. While the average fee increased fourfold in current US dollar terms between 2008 and 2012, the growth rates for the lowest-cost field (education) and highest-cost field (law) were 4.25 and 3.75 respectively. As a result, the ratio between the top and the bottom tuition fee levels decreased slightly from 1.64 to 1.45 in these four years. At the same time, the pace of tuition fee growth (an average of 43 percent per year) far outpaced the rate of growth of per capita GDP in Uzbekistan (14 percent per year between 2008 and 2012). As a result, the high cost of contract education in the country’s

universities has made it increasingly an opportunity open only to the more affluent members of the society.<sup>62</sup>

***The composition of expenditures is not aligned with the needs of a modern higher education system***

95. The current allocation of spending within Uzbekistan’s higher education system (Table 6) is not in line with the trends in other countries that are developing high-quality university systems. Although public investment funds have taken on an increasingly active role in financing HEI’s capital investments in recent years, the responsibility for paying (admittedly low) staff salaries has shifted increasingly onto the universities. Moreover, generous student stipends continue to be a burden on university budgets (Figure 23). This section discusses each of these expenditure categories in greater detail.

**Table 6: Distribution of Consolidated Budgets of HEIs in Uzbekistan, by Economic Expenditure Category**

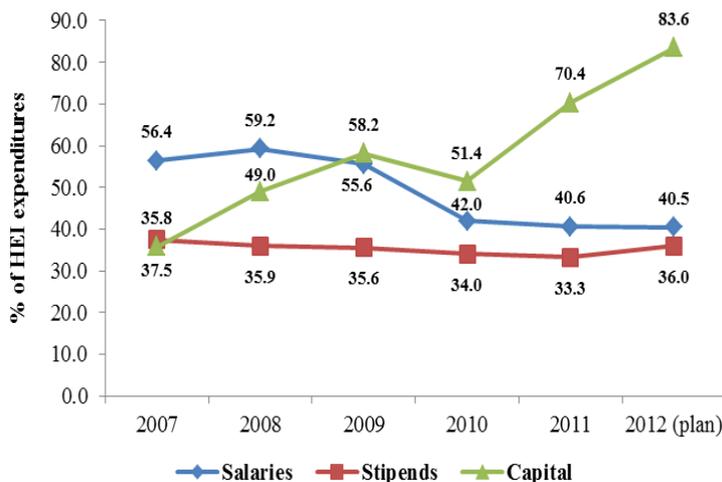
(%)	2007	2008	2009	2010	2011	2012 (plan)
<b><i>Recurrent expenditures</i></b>	<b>92.5</b>	<b>94.3</b>	<b>95.9</b>	<b>96.3</b>	<b>94.6</b>	<b>90.3</b>
Salaries	34.0	31.8	37.6	36.9	37.5	37.2
Stipends	38.1	37.0	39.3	42.9	41.5	37.2
Social security and other taxes	7.7	7.4	8.8	9.0	9.2	9.2
Utilities	3.2	2.3	2.0	1.7	1.6	1.7
Other recurrent expenditures	9.6	15.8	8.1	5.8	4.9	5.0
<b><i>Capital expenditures</i></b>	<b>7.5</b>	<b>5.7</b>	<b>4.1</b>	<b>3.7</b>	<b>5.4</b>	<b>9.7</b>
Capital repair and equipment	7.5	4.6	3.2	3.1	2.5	2.2
Capital investment program	0.0	1.1	1.0	0.7	0.4	0.8
Fund for the development of the material technical base of HEIs	0.0	0.0	0.0	0.0	2.5	6.7
<b>Total expenditures (US\$ million)</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
	<b>169.1</b>	<b>246.6</b>	<b>318.9</b>	<b>384.6</b>	<b>465.4</b>	<b>548.2</b>

Sources: World Bank staff calculations based on Ministry of Finance and MHSSE data.

Notes: Consolidated budget expenditures include funding from the capital investment program and the Fund for the development of the material technical base of HEIs. Exchange rate (UZS/US\$): 2008 = 1317.64; 2009 = 1463.81; 2010 = 1587.12; 2011 = 1715.81; 2012 = 1892.40.

<sup>62</sup> This conclusion was supported by a recent household survey on “Family Asset Mobilization” conducted by the Center for Economic Research (CER). CER and UNDP (2011).

**Figure 23: Share of Selected HEI Expenditure Categories Financed by the State Budget in Uzbekistan**



Sources: World Bank staff calculations based on Ministry of Finance and MHSSE data

### *Student Stipends*

96. Uzbekistan continues to pursue the model that was used in the Soviet Union in which universities provide stipends to a large share of their students to defray their living expenses. These stipends are generous, nearly universal, and serve a social protection function, which increasingly crowds out universities' other education-related expenses. Most importantly, the size of these payments is largely out of line with the practices found in most globally competitive higher education systems.

97. The levels of stipends paid out monthly to students in the higher education institutions of Uzbekistan are generous – up to US\$130 per month for students receiving excellent marks in 2012. Those receiving good and satisfactory marks are entitled to stipends equivalent to 75 and 50 percent respectively of the top stipend amount. Orphans, military veterans, and students with disabilities receive somewhat higher stipends, while a small number of highly qualified students receive special Presidential stipends, which are even more generous. This level of generosity implies that students who study on a contract basis and receive high marks can expect to have their

tuition payments reduced by up to 90 percent; meanwhile, grant-financed students can receive a free education as well as up to US\$1,560 per year in living expenses financed by the State.

98. This merit-based system of stipends, which does not take into account students' financial need, serves as a regressive transfer mechanism from the State and from less qualified students to those students who receive the best marks (who often come from the best-off families). Given the low tertiary enrolment rates in Uzbekistan (fewer than 10 percent of secondary school graduates enter university), it is highly likely that those who do enroll come overwhelmingly from the country's wealthier households<sup>63</sup>. The stipend system, therefore, serves as an untargeted social benefit and may end up supporting the children of Uzbekistan's more affluent families, who least need it and who under the current system can receive monthly payments that can exceed three times the country's minimum monthly wage.

99. Moreover, the stipend payments represent a heavy burden on the State budget and on the budgets of Uzbekistan's higher education institutions (which finance two-thirds of total stipend expenses). In 2010 and 2011, stipend payments accounted for 43 and 42 percent respectively of total spending on higher education. This presents a drain on the already limited revenues being allocated to the country's higher education sector. Furthermore, the large share of higher education expenditures that is being spent on making payments to students instead of on the provision of education services is out of line with international norms. Even compared with other post-Soviet countries that have large-scale stipend schemes, Uzbekistan's payments to students represent a larger share of higher education spending than in Belarus (21 percent), Moldova (12 percent), and Tajikistan (14 percent).<sup>64</sup> Meanwhile, in the countries of the OECD, the average share of public spending on higher education that is allocated to scholarships and other grants to students and households is a mere 10 percent.<sup>65</sup>

### *Faculty Salaries*

100. The higher education system in Uzbekistan is characterized by a large number of teaching staff whose salaries are not competitive in international terms. The ratio of 11.9 students per faculty member<sup>66</sup> is substantially lower than the OECD average of 14.8 to 1 (Figure 24).

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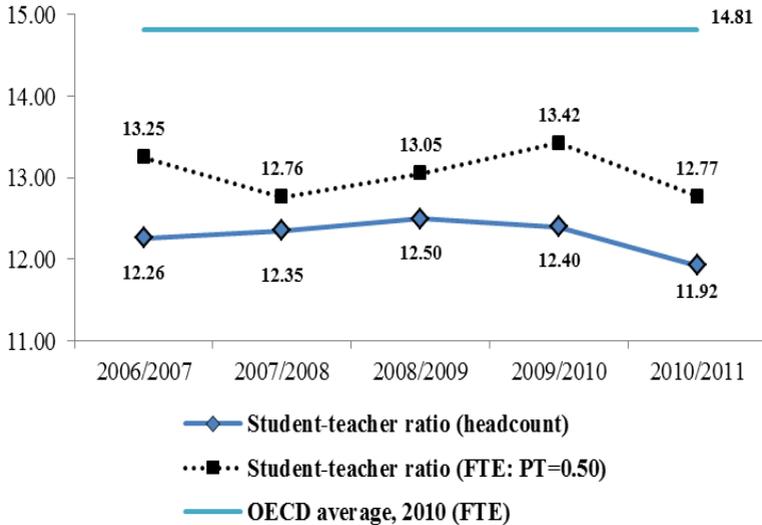
<sup>63</sup> CER and UNDP (2011)

<sup>64</sup> World Bank BOOST government expenditure databases for the respective countries.

<sup>65</sup> OECD (2012)

<sup>66</sup> The ratio was estimated based on total teaching staff headcount. The ratio based on full-time equivalent staff (assuming one-half of a full workload per part-time teacher) is 12.8.

**Figure 24: Higher Education Student-Teacher Ratios in Uzbekistan than in the OECD**



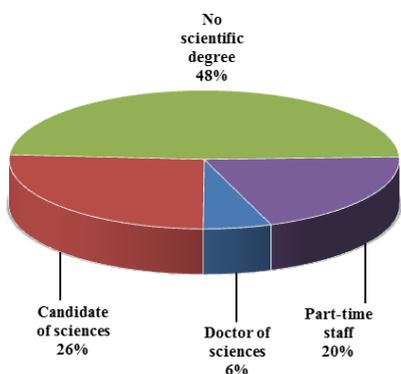
*Sources:* World Bank staff calculations based on MHSSE data and OECD (2012)

*Notes:* Student-teacher ratios for Uzbekistan are calculated using teaching staff headcount and a full-time equivalent (FTE) approximation, assuming an average workload of 0.5 per part-time staff member. Student-teacher ratio for the OECD is calculated using the FTE.

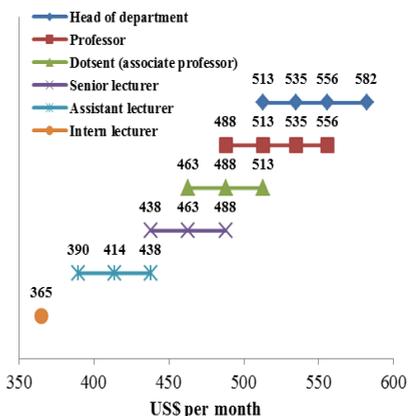
101. Yet many of these teachers are poorly paid and lack high-level academic credentials. In 2011/12, only 32 percent of instructional staff in Uzbek universities held the equivalent of a PhD (either a Doctor or a Candidate of Sciences). Nearly half of the instructors (48 percent) were employed on full-time basis while holding no such degree, while 20 percent were employed part-time (Figure 25). Their salaries ranged from US\$365 per month for an intern lecturer with no scientific degree to US\$582 per month for a head of department with the highest academic degree. The average base salary in 2012 was approximately US\$480 per month, slightly below the average wage in the economy.

**Figure 25: Composition of Higher Education Teaching Staff by Academic Qualifications and Salary Level in Uzbekistan**

(a) Share of teaching staff by academic qualification, 2011/12



(b) Base salary ranges of teaching staff by level, as of August 1, 2012



Sources: MHSSE and Ministry of Finance data

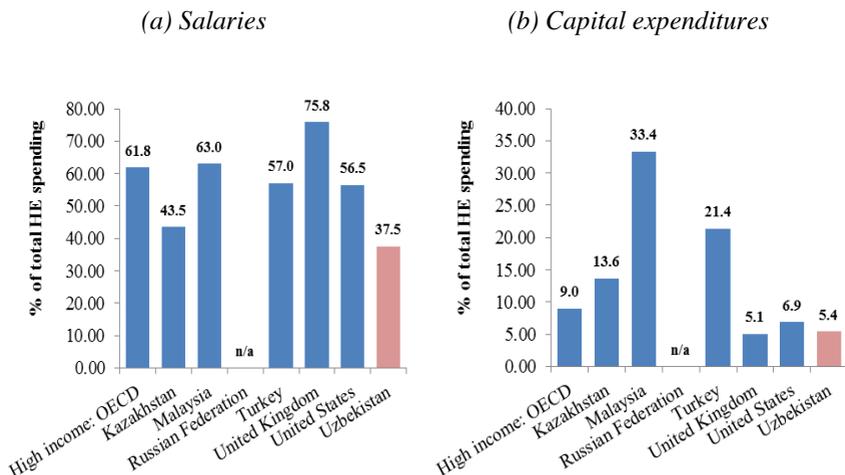
Notes: Scientific degrees include the PhD-equivalent Candidate of Sciences and Doctor of Sciences. Salaries of university teaching staff are determined by their scientific degree and the size of the institution in which they teach. Exchange rate (UZS/US\$): 2012 = 1892.40.

102. In the Uzbek system, salaries account for a smaller share of total expenditures than in the higher education systems in most comparator countries. Total salary payments make up only 37 percent of all higher education spending in Uzbekistan. Meanwhile, the average for the OECD countries is 62 percent, while Turkey and Malaysia spend 57 and 63 percent on salaries respectively (Figure 26). While devoting a large share of the higher education budget to salaries is not in itself a desirable or affordable goal, the lack of importance given to staff remuneration may be a sign of the system's under-investment in its most important resource – human capital.

103. The current imbalance between the amount of funding been spent on students and on their professors puts Uzbekistan out of line with the practices followed in most other countries. A system characterized by a large number of poorly paid staff and a small number of well-compensated students (whose monthly stipends can be equivalent to one-third of the base salary of a

university instructor) is ripe for misuse. Given the strong incentives for students to maintain high marks, which are directly associated with significant financial benefits, it would not be surprising if informal and illegal payments to achieve high marks were pervasive throughout the tertiary system.

**Figure 26: Shares of Salaries and Capital Expenditures in Total Spending on Higher Education in Uzbekistan and Comparator Countries**



Sources: World Bank staff calculations based on data from Uzbek authorities, OECD (2012), and the World Bank EdStats database.

Notes: Expenditure data are from 2011 for Uzbekistan and for 2009 or the latest available year for comparator countries.

### Capital Investment

104. Investment in capital improvements for higher education has declined steeply in Uzbekistan in recent years. By 2010, capital expenditures reached a low point of less than 4 percent of total sector spending (Table 6). However, the approval of Presidential Decree #1533 in 2011 ushered in a new era of public investment in the physical capital of Uzbekistan's universities. Under the decree, the government established a fund to be used to finance: (i) the construction, rehabilitation, and capital repair of classrooms, laboratories, athletic facilities, and dormitories and (ii) the furnishing of these facilities with modern technology and equipment.

105. By 2011, the first year of the fund's existence, capital investment surpassed 5 percent of total spending on higher education. Although this share is still below those found in most of Uzbekistan's comparator countries (Figure 26), spending levels are set to increase in the coming years. In 2012, capital spending was planned to approach 10 percent of total sector outlays. Decree #1533 sets out plans to invest more than UZS277 billion (in excess of US\$133 million at current prices) into the capital base of higher education institutions by 2016. The primary focus of the planned capital investment is on establishing and modernizing the scientific and research laboratories within Uzbek universities. Part of the funding, according to the decree, is to be sought from external sources such as credits from international financial institutions and grants from domestic and international donors, trust funds, and other benefactors.

106. In summary, the analysis in this chapter shows that the higher education system is characterized by low access and concerns about quality. The internal management of the sector is fragmented, with different actors having overlapping responsibilities, thereby making it difficult to ensure system-wide accountability. The quality assurance system is not aligned with international best practice, and has weak international linkages. Finally, while reported overall state budget spending on education, around 8 percent of GDP, is one of the highest in the world, the share of this spending on tertiary education, at around 0.4 percent of GDP, is one the lowest. In addition, the spending patterns within tertiary education are misaligned. Teacher salaries are low by international standards (starting at USD 365 per month), while generous student stipends (up to USD 130 per month) are nearly universal. These characteristics of the system areas out of line with international practices and are not conducive to good system governance.

## **CHAPTER 4: THE WAY FORWARD - OPTIONS FOR MODERNIZING AND IMPROVING THE TERTIARY EDUCATION SYSTEM**

107. The preceding chapters have presented a thorough analysis of the current state of Uzbekistan's higher education system in terms of its external links to the country's economy and its internal management mechanisms. The findings suggest that the sector struggles to keep up with the demands of the modern economy, which requires increasing numbers of highly qualified specialists trained in the fields aligned with national development priorities. The higher education system also lags in fulfilling its role as a driver of innovation and generator of new ideas, which are necessary to drive growth in modern knowledge-based economies. The management of higher education systems is characterized by low access, outdated governance and quality assurance mechanisms, and financing arrangements that are not aligned with the needs of modern economy. In response to these challenges, this following section lays out a path to modernizing Uzbekistan's tertiary education system to meet the country's needs going forward. The discussion focuses on issues of strategic vision, access, governance, quality assurance, financing, and the system's relevance for the broader economy.

### **A. Developing a Medium-Term Strategy for the Higher Education Sector**

108. *The Challenge:* The report makes clear that, while several directives and laws dealing with different aspects of the higher education sector exist, there is no comprehensive public document that lays out the medium- and long-term vision for the development of the higher education sector. Consequently, in the absence of an explicit, holistic, and coherent strategy, policymaking is driven by the latest directive. This approach can often leave key reforms languishing.

109. *The Response:* The development and adoption of a comprehensive strategy for the development and modernization of the higher education sector

is crucial to ensuring that all stakeholders contribute to the achievement of a shared objective and that there is a common understanding of the wider implications of system-wide reform. While such a strategy can be informed by analytical work produced by key partners, such as this report, the strategy has to be developed by the government in consultation with key internal stakeholders in Uzbekistan.

110. *Policy Target:* The development and approval of a comprehensive medium-term tertiary education strategy.

## **B. Expanding Equitable Access**

111. *The Challenge:* Tertiary enrolment in Uzbekistan is among the lowest in the world. Enrolment patterns are misaligned with the needs of the evolving economy and are not responding to student demand. Gender disparities in enrolment are among the highest in the region.

112. *The Response:* The development of a higher education system that is responsive to the needs of an evolving economy will require, in addition to guidance from the central government that institutions are able to offer more or fewer places to students in response to demand. This will allow the market mechanism to complement the existing system and reduce the gap between the degrees demanded by the market and those supplied by the higher education system. Along these lines, the supply of tertiary education provision can be further differentiated through a variety of degree and non-degree programs. Not all students need to enroll in university programs leading to a Bachelor's degree; some may benefit from short-term technical and occupational courses that offer an immediate response to labor market demand for certain skills.<sup>67</sup> In addition, HEIs might be allowed to vary their fees in line with demand within a certain range set by the government (instead of all having to charge a fee that is externally and centrally determined for each program). Even this degree of variation in fees will allow universities to compete with each other. While the current system allows each student to apply only to one program in one university, it would be worthwhile exploring whether this can be replaced with a ranked list of institutions, allowing students to target the best universities without running the risk of losing a year in case they are not accepted by their first choice. Moreover, the declining share of female students enrolling in the system suggests that a proactive policy to reverse this decline is warranted in order to put Uzbekistan

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<sup>67</sup> For example, 51 percent of tertiary education students in the United States are enrolled in community colleges. These programs typically lead to two-year Associate's degrees or shorter certificate courses that are recognized in the labor market.

alongside its regional and global comparators in this respect. Finally, access can be expanded at low cost through modern innovations in e-education technology, such as Massive Open Online Courses<sup>68</sup>.

113. *Policy Targets:*

- i. Increasing tertiary enrolment rates from around 10 percent to 20 percent;
- ii. Allowing universities/HEIs to enroll more or fewer students based on demand (within 20 percent of the target assigned by the Government of Uzbekistan);
- iii. Expanding the scope of tertiary education provision to include shorter technical and occupational degree and non-degree programs that respond to labor market demand;
- iv. Increasing the female share of enrolment to 50 percent.
- v. Piloting innovations in e-education and/or MOOCs to expand access.

**C. Improving System Governance**

114. *The Challenge:* The tertiary sector lacks a comprehensive legal framework, and the management of the sector is fragmented among many actors at the central level. Uzbek HEIs lack sufficient institutional autonomy in several key areas including institutional leadership and management, the freedom to set their own human resource, academic, administrative, and financial policies. The sector lacks a modern higher education management information system (HEMIS), which is hampering informed evidence-based decision-making. Finally the framework governing non-state sector participation in higher education is restrictive, as evidenced by a lack of private providers, and exacerbates low levels of access.

115. *The Response:* The Tertiary Education Sector Strategy, mentioned above, must be accompanied by a comprehensive law (and accompanying rules) to underpin reforms in the governance of the sector. The law should streamline and remove any overlapping responsibilities among different ministries. The Rectors of the HEIs should be chosen by a professional and independent panel by means of an international search and then a ranked list of candidates to be submitted to the relevant executive authority. The Board of Trustees should be upgraded from a consultative body to one empowered with real authority, for example, the responsibility to hold the Rector responsible

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<sup>68</sup> Massive Open Online Courses (MOOCs) are free non-degree online courses hosted by leading international universities with open unlimited global enrolment.

for achieving progress targets set by the Board. The Board of Trustees together with the Academic Councils should be accorded greater authority to set a greater share of the curriculum within the university or HEI, perhaps for as much as 20 percent of the course content (with the remaining 80 percent being set by State Educational Standards and lead universities in each discipline) to differentiate themselves from other HEIs and to respond to evolving local needs and demand. The Board should also have the authority to vary fees and enrolment levels within a 20 percent range set by the Cabinet of Ministers or the MHSSE. In order to facilitate effective decision-making at the institutional and central level, it is critical to establish a modern HEMIS in Uzbekistan.

116. *Policy Targets:*

- i. Developing and passing a Comprehensive Tertiary Education Law;
- ii. Ensuring that Rectors are chosen through a transparent and open search conducted by an independent and professional panel;
- iii. Empowering universities/HEIs Boards to set curricula and fees (within 20 percent of a target assigned by the Government of Uzbekistan);
- iv. Developing and deploying a modern HEMIS.
- v. Reforming the rules and regulations governing private sector participation in higher education provision.

#### **D. Modernizing Quality Assurance**

117. *The Challenge:* Current quality assurance norms in Uzbekistan fall short of international practices. The quality assurance system in Uzbekistan is in transition, attempting to move away from a centrally directed and controlled system to one that incorporates international best practices in external and internal quality assurance mechanisms. Much more work remains to be done as the universities are still mostly governed by central ministries and have only limited autonomy to tailor their programs to the needs and requirements of the Uzbek economy.

118. *The Response:* The development of an independent quality assurance agency is critical for a modern higher education system. In Uzbekistan, the State Testing Center can be strengthened and empowered to perform this role. In addition to the STC's "external" quality assurance, individual HEIs must be strengthened to perform an "internal" quality assurance function through so-called Quality Enhancement Cells (QECs), based in part on self-assessments and peer reviews by other HEIs. Currently, Uzbekistan is not a signatory

country to the Bologna Protocol and, with some exceptions, has not proactively developed any mechanisms to implement it within Uzbekistan. Nevertheless, there is a local legislative basis for introducing some elements of the Bologna Process in Uzbekistan, which would support the country to become increasingly integrated into worldwide education community and encourage the expansion of competition in education. The Bologna Process provides a structure and community for quality enhancement and systems integration that could allow the quality assurance system in Uzbekistan a rapid development to achieving globally recognized operating standards. This in turn would support the institutions within the system to achieve regional and international recognition of their quality and that of their graduates and research. It is important for Uzbekistan to develop a comprehensive quality assurance system aligned with Bologna procedures and, over time, to meet the requirements for inclusion in the European Higher Education Area.

119. *Policy Targets:*

- i. Strengthening the STC to enable it to perform the role of an independent quality assurance agency;
- ii. Establishing and strengthening Quality Enhancement Cells in universities and HEIs and fostering the exchange of information and good practices among HEIs;
- iii. Establishing international collaborative arrangements for quality improvement, curriculum development, student and faculty exchanges.

## **E. Reforming Financing Systems**

120. *The Challenge:* Public spending on tertiary education in Uzbekistan is lower than many countries at a similar stage of development. In addition, while overall spending on education is high, the share of tertiary education spending is abnormally low. Spending patterns in the tertiary sector are not aligned with the needs of a modern tertiary education system, with generous, near-universal student stipends serving as a drain on limited resources and the salaries of faculty being unusually low, leading to perverse incentives.

121. *The Response:* Public spending on tertiary education as share of overall public education spending needs to increase from the current 5 percent to 10 percent in the medium term. The student stipends system needs to be revised and rationalized. Teachers' salaries need to be increased in line with regional and international trends and linked to a more rigorous performance evaluation in both teaching and research.

122. *Policy Targets:*

- i. Increasing the share of public education spending devoted to tertiary education from the current 5 percent to 10 percent in the medium term and to 15-20 percent in the long term (commensurate with expanding quality and enrolment targets);
- ii. Rationalizing the student stipends system;
- iii. Linking fees for contract students to both market needs and student demand;
- iv. Increasing teacher salaries in line with regional and international trends and linking them more rigorously to performance.

**F. Fostering Innovation and Improving Market Linkages**

123. *The Challenge:* Uzbekistan is currently entering what could become the prime period of its economic potential. Demand for skilled labor has grown faster than supply in Uzbekistan, and skills mismatches are evident in the country's labor market. In addition, while innovation and technological development are critical contributors to economic growth in any modern economy, Uzbekistan's lags behind in developing sufficient innovation capacity necessary to propel the country to upper middle income status.

124. *The Response:* It is critical to increase the market relevance of tertiary graduates and to establish and strengthen the innovation infrastructure that will enhance the quality and market relevance of university activities overall and encourage creativity and innovation.

125. *Policy Targets:*

- i. Instituting regular and independent market surveys to gauge the skills requirements of the economy. This will be part of the information gathered by HEMIS for use by policymakers;
- ii. Developing and strengthening partnerships with both domestic and foreign academic institutions (research partnerships, faculty exchanges, and training);
- iii. Developing and strengthening partnerships with domestic and foreign industry (modernizing curricula, laboratories, innovation platforms, research, and joint business development);
- iv. Establishing high-quality laboratories in relevant and priority technical fields, underpinned by modern curricula, trained faculty and staff, and related university-industry linkages.

**Table 7: Suggested Implementation Sequence of Policy Reforms**

<b>Objective</b>	<b>Short-Term Measures (1-3 years)</b>	<b>Medium-Term Measures (3-5 years)</b>
<b>A.</b> Developing a Medium-Term Strategy for the Higher Education Sector	<b>A1.1.</b> Develop and approve a comprehensive medium-term tertiary education strategy	<b>A2.1.</b> Begin implementation of the medium-term tertiary education strategy
<b>B.</b> Expanding Equitable Access	<p><b>B1.1.</b> Align admission quotas in line with current and prospective needs of the economy</p> <p><b>B1.2.</b> Allow university applicants to seek admission to multiple institutions at once (e.g., through a ranked list of preferred institutions)</p> <p><b>B1.3.</b> Pilot low-cost approaches to expanding access (e.g., using MOOCs)</p> <p><b>B1.4.</b> Proactively address the underlying causes of gender disparities in tertiary enrolment</p>	<p><b>B2.1.</b> Expand overall tertiary enrolment to levels of comparator countries</p> <p><b>B2.2.</b> Relax admission quotas, allowing universities to admit students based on demand</p> <p><b>B2.3.</b> Introduce shorter degree and non-degree programs in response to labor market demand</p> <p><b>B2.4.</b> Allow universities to vary fee levels based on demand</p> <p><b>B2.5.</b> Increase female participation in tertiary education</p>
<b>C.</b> Improving System Governance	<p><b>C1.1.</b> Develop and approve a comprehensive tertiary education law, which streamlines and modernizes governance of the sector, and facilitates the entry of private providers.</p> <p><b>C1.2.</b> Amend the process for selecting</p>	<p><b>C2.1.</b> Empower universities to set curricula, admission levels, and fees within a range defined by the Government</p> <p><b>C2.2.</b> Utilize the HEMIS to enhance evidence-based policymaking through greater reliance on data and</p>

Objective	Short-Term Measures (1-3 years)	Medium-Term Measures (3-5 years)
	<p>university rectors to one conducted by a professional and independent panel</p> <p><b>C1.3.</b> Develop and deploy a modern HEMIS</p>	<p>analysis</p>
<p><b>D.</b> Modernizing Quality Assurance (QA)</p>	<p><b>D1.1.</b> Strengthen the State Testing Center, transforming it into an independent QA agency tasked with performing external QA of the higher education system</p> <p><b>D1.2.</b> Establish Quality Enhancement Cells at universities, which will perform internal QA functions</p> <p><b>D1.3.</b> Foster international collaborations for quality improvement, curriculum development, faculty and staff exchange</p>	<p><b>D2.1.</b> Fully adopt international best practices in QA (e.g., those encompassed by the Bologna Protocol)</p> <p><b>D2.2.</b> Join international QA frameworks, such as the European Higher Education Area</p>
<p><b>E.</b> Reforming Financing Systems</p>	<p><b>E1.1.</b> Gradually increase the share of the education budget devoted to higher education, channeling resources into quality enhancing investments</p> <p><b>E1.2.</b> Rationalize the stipend system to align it with students' needs and international best practices</p> <p><b>E1.3.</b> Gradually increase the salaries of</p>	<p><b>E2.1.</b> Increase the share of the education budget devoted to higher education to a level similar to that of comparator countries, channeling resources into expanding access</p> <p><b>E2.2.</b> Link tuition fees for contract students with market needs and student demand</p>

Objective	Short-Term Measures (1-3 years)	Medium-Term Measures (3-5 years)
	teaching staff to internationally competitive levels	<b>E2.3.</b> Increase the salaries of teaching staff, linking remuneration more rigorously with performance
<b>F.</b> Fostering Innovation and Improving Market Linkages	<p><b>F1.1.</b> Modernize teaching and research laboratories in universities focused on technical priority areas</p> <p><b>F1.2.</b> Align curricula and teaching practices to properly utilize modern laboratory equipment</p> <p><b>F1.3.</b> Pilot a competitive funding mechanism to encourage the development of academic innovations and industry linkages by universities</p> <p><b>F1.4.</b> Foster the establishment of partnerships between Uzbek and foreign universities, as well as between Uzbek universities and foreign or domestic industries</p> <p><b>F1.5.</b> Institute regular and independent market surveys to gauge the skills requirement of the national economy</p>	<p><b>F2.1.</b> Develop functioning feedback loops between universities and industry (e.g., focusing on the adequacy of graduate skills, curriculum design, and research produced by universities)</p> <p><b>F2.2.</b> Scale up the competitive funding mechanism, developing it into an institutional driver of academic innovations and university-industry linkages</p>

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## **Annex 1: Results of the enterprise survey to assess skills of recent university graduates<sup>69</sup>**

1. **At present, little is known about the quality of tertiary education in Uzbekistan.** There are no standardized tests taken by university graduates, and neither higher education institutions nor the national bodies responsible for managing the higher education system conduct serious evaluations of graduate quality upon entering the labor market (such as tracer studies). Although that may soon change,<sup>70</sup> at the time of the preparation of this report, little hard data was available to inform Uzbek policymakers about the quality of skills imparted by the country's universities.

2. **To fill this knowledge gap, the World Bank commissioned a survey of 232 enterprises in Uzbekistan.** The purpose of the survey was to gather evidence about the attitudes of the country's employers toward the quality and relevance of skills possessed by university graduates. Given the general evidence of skill mismatches in the Uzbek labor market, the survey's focus was on assessing employer satisfaction with recent graduates' skills in individual skill categories. The survey also asked employers to indicate the relative importance of each skill for successful job performance. The quantitative survey was also complemented by in-depth qualitative interviews with a subset of sampled employers; these interviews were used as the basis for case studies detailing employer attitudes toward graduates' skills in specific industries.

### ***Survey methodology***

3. **Objectives.** The primary aims of the study were as follows:

- To obtain basic information about the firms that hired graduates of higher education institutions in recent years (2009-2012);
- To assess the relative importance to employers of various general and specific skills of recent higher education graduates;

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<sup>69</sup> A survey was designed and carried out for this report. Additional information about the survey, including a detailed description of its methodology and results, can be found in the companion consultant report (Tahlil 2013).

<sup>70</sup> A 2012 decree of the Cabinet of Ministers "On the implementation of a ranking system of higher education institutions" (Decree #371 / December 29, 2012) instructs the responsible national bodies to develop a university evaluation system based on a broad range of relevant criteria. Among other factors, the assessment of graduate qualifications based on an employer survey will make up 10 percent of each institution's score.

- To assess employers' satisfaction with the various general and specific skills of recent higher education, and of technical skills of engineering graduates;
- To identify existing gaps between the skills of higher education graduates and employer needs.

4. **Survey instrument.** The questionnaire used to conduct the survey of employers can be found in Annex 2. It is six pages long and contains the following sections:

- Company profile (firm identifying information);
- General information about the firm and its hiring practices;
- Overall satisfaction with skills of university and specialized secondary graduates;
- Importance of and satisfaction with general skills of university graduates;
- Importance of and satisfaction with specific skills of university graduates;
- Importance of and satisfaction with technical skills of engineering graduates.

5. **Target population.** The population of interest included all enterprises in Uzbekistan (private and state-owned) that hired graduates of higher education institutions between 2009 and 2012, except (i) public education institutions and (ii) agricultural enterprises. Education institutions, which employ up to 60 percent of all higher education graduates in Uzbekistan, were excluded because the quality of preparation of education sector professionals is beyond the scope of this report. Agricultural enterprises were excluded because too few of them were identified as employing higher education graduates, thus making it difficult to ensure their accurate representation in the survey sample.

6. **Sampling frame.** Two enterprise databases maintained by the State Committee on Statistics (“Goskomstat”) were used to construct the sample of firms to be surveyed. These included:

- The Unified State Register of Enterprises and Organizations (“EGRPO”), which contains basic registration information of all legal entities in Uzbekistan – a total of 301,613 registered entities as of January 1, 2013 (excluding private farmers).

- The T-1 (“Labor-1”) statistical form database, which contains data on the total number of graduates of higher and specialized secondary education institutions employed by legal entities – a total of 10,702 registered entities reported hiring such graduates in 2011, of which 7,199 were still active as of December 1, 2012, in sectors outside education and agriculture.

After merging information from the two databases, the universe of 7,199 enterprises was used to draw a sample of firms for this study.

7. **Sampling methodology.** Multistage cluster sampling was employed for the selection of firms to be surveyed. The sampling was done using the “SPSS complex sampling” tool directly from the Goskomstat database. It included the three stages summarized below:

	<i>Stage 1</i>		<i>Stage 2</i>		<i>Stage 3</i>	
<i>Sampling technique:</i>	Simple	random	Simple	random	Simple	random
<i>Strata:</i>	sampling (WOR)		sampling (WOR)		sampling (WOR)	
<i>Clusters:</i>	Economic regions (6 total)		Sectors of the economy (5 total)		Enterprise size groups (2 total)	
	Districts		Ownership types		n/a	

The resulting sample was designed to reflect all Uzbek firms that report having hired university graduates in 2009-2012. Analytical weights were constructed to ensure that the sample is representative along the following dimensions:

- Nationally;
- By economic region (“EGR”), defined as follows:

<i>Economic region</i>	<i>Administrative divisions of Uzbekistan</i>
Central EGR	Bukhara, Navoi, and Samarkand <i>oblasts</i>
Ferghana EGR	Andijan, Ferghana, and Namangan <i>oblasts</i>
Mirzachul EGR	Djizzak and Syrdarya <i>oblasts</i>
Northern EGR	Republic of Karakalpakstan and Khorezm <i>oblast</i>
Southern EGR	Kashkadarya and Surkhandarya <i>oblasts</i>
Tashkent EGR	Tashkent city and <i>oblast</i>

- By sectors of the economy, defined as follows:

<i>Sector of the economy</i>	<i>OKONH<sup>71</sup> industry codes</i>
Industry	1xxxx
Agriculture and forestry (excluded from analysis)	2xxxx-3xxxx
Construction, transport, and communications	5xxxx-6xxxx
Trade and catering	7xxxx
Social services (excluding education)	91xxx, 93xxx, 95xxx
Other services	8xxxx, 90xxx, 96xxx-98xxx

- By ownership types: private, public/state-owned;
- By enterprise size groups (based on number of employees): micro/small, large.<sup>72</sup>

A sufficiently large sample was drawn to enable replacement of firms during survey implementation.

8. **Survey implementation.** After the completion of preparatory steps (including the double translation, testing, and adjustment of the questionnaire), trained local interviewers were dispatched into the field to conduct data collection during February-March 2013. Face-to-face interviews were conducted with firms' representatives (typically human resources officers and/or head officers) during visits to the firms' premises. A total of 470 organizations were visited, resulting in 232 completed interviews (49 percent response rate). Top reasons for failing to complete an interview were as follows: the firm hired no university graduates during 2009-2012 (24 percent), wrong address and contact information (21 percent), and refusal (4 percent). The composition of the resulting sample of 232 firms compared favorably with that of the target population of firms (see Table A1-1), as described above.

<sup>71</sup> For more details on the OKONH ("National classification of the sectors of the economy") codes, please consult <http://zakonuz.uzshar.com/?document=13125> (in Russian).

<sup>72</sup> The threshold for "large" enterprises is either 25, 50, or 100 employees, depending on industry.

**Table A1-1. Distribution of firm characteristics in the target population and survey sample**

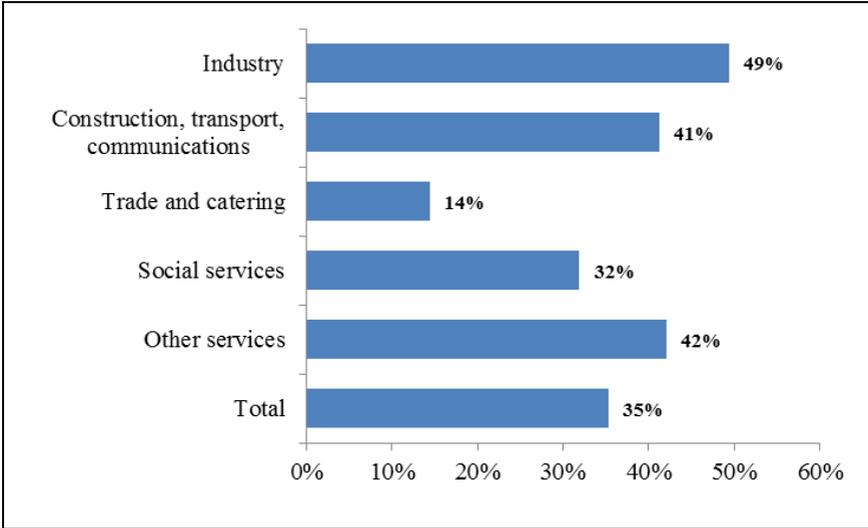
<i>Firm characteristic</i>	<i>Population share</i>	<i>Sample share (unweighted)</i>
<i>Economic region</i>		
Central EGR	1,319 (18%)	48 (21%)
Ferghana EGR	1,478 (20%)	45 (19%)
Mirzachul EGR	410 (6%)	30 (13%)
Northern EGR	488 (7%)	30 (13%)
Southern EGR	589 (8%)	38 (16%)
Tashkent EGR	3,030 (41%)	41 (18%)
<i>Sector of the economy</i>		
Industry	1,809 (25%)	49 (21%)
Agriculture and forestry (excluded from analysis)	115 (2%)	0 (0%)
Construction, transport, and communications	949 (13%)	43 (19%)
Trade and catering	1,617 (22%)	37 (16%)
Social services (excluding education)	1,639 (22%)	46 (20%)
Other services	1,185 (16%)	57 (25%)
<i>Ownership type</i>		
Private	5,337 (73%)	156 (67%)
Public/state-owned	1,977 (27%)	76 (33%)
<i>Enterprise size</i>		
Micro/small	5,146 (70%)	127 (62%)
Large	2,168 (30%)	105 (38%)
<b>Total (including agriculture)</b>	<b>7,314 (100%)</b>	<b>232 (100%)</b>

### *Quantitative findings*

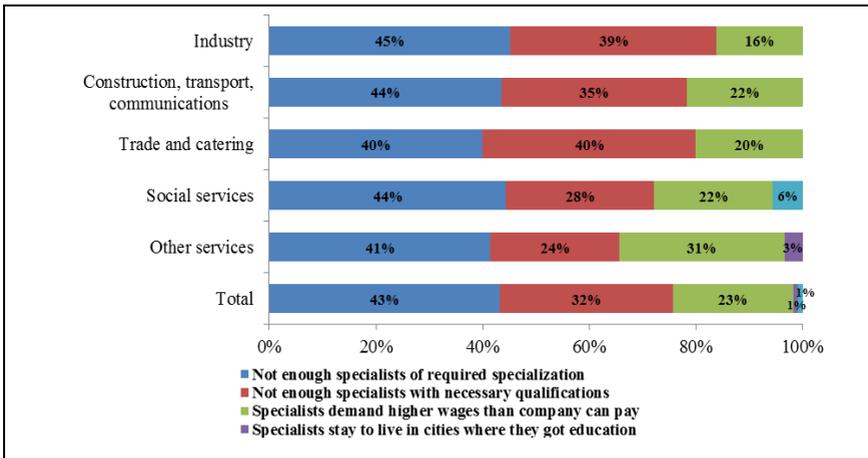
9. **The survey results revealed several gaps between employer skill needs and the stock of skills possessed by Uzbekistan’s graduates.** These gaps include: shortages in the number of skilled specialists supplied to Uzbekistan’s labor market, leading to hiring difficulties reported by employers; varying levels in overall employer satisfaction with skills of different types of graduates (from universities, vocational colleges, and academic lyceums); and deficits of various categories of skills deemed important by employers among recently hired university graduates.

10. **Difficulties in hiring.** When it comes to the quantity of graduates, 35 percent of all employers indicate that they have difficulty hiring sufficient numbers of qualified specialists with higher education (see Figure A1-1). This share increases to nearly 50 percent among industrial enterprises. The main reason for the difficulty, as reported by employers, is that “not enough specialists” are available in the labor market (see Figure A1-2).

**Figure A1-1. Share of firms reporting difficulties in hiring sufficient numbers of qualified specialists with higher education ( $N = 232$ )**

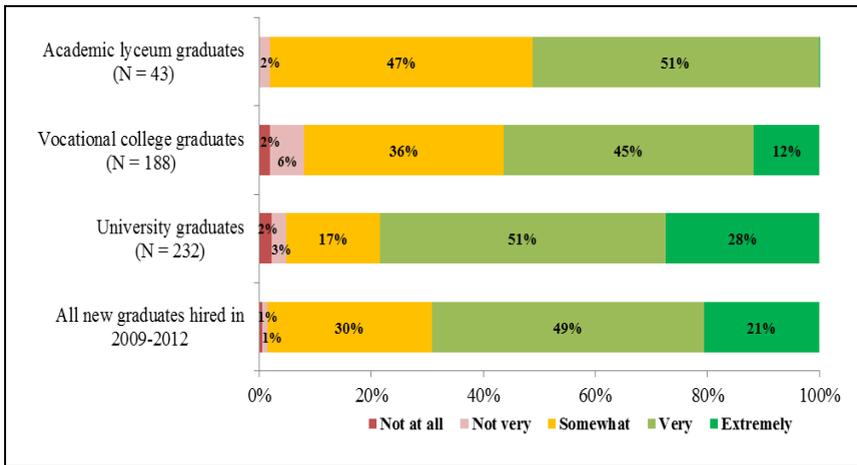


**Figure A1-2. Reasons reported by firms for difficulties in hiring sufficient numbers of qualified specialists with higher education ( $N = 111$ )**

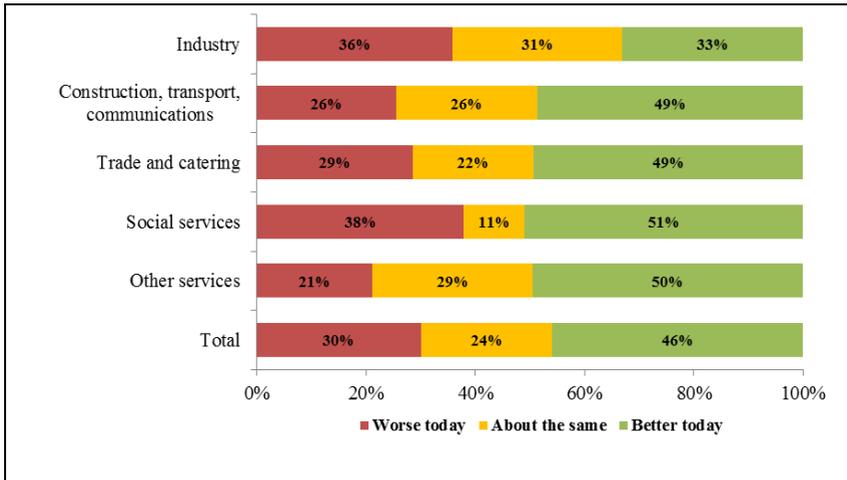


11. **Overall satisfaction with graduate skills.** With respect to quality, employers are generally satisfied with the skills of the university graduates whom they hired between 2009 and 2012, with 79 percent reporting to be “extremely” or “very satisfied” (see Figure A1-3). However, employers reported substantially lower levels of satisfaction with the skills of graduates of vocational colleges and academic lyceums, with 57 and 51 percent of firms, respectively, reporting to be “extremely” or “very” satisfied. At the same time, nearly half (46 percent) of all employers consider the quality of skills of recent university graduates to be better than it was 10 years ago (see Figure A1-4). However, this share is only 33 percent among industrial enterprises, with 36 percent reporting that today’s skills are worse than before (and 31 percent saying that they are “about the same”).

**Figure A1-3. Share of firms reporting satisfaction levels with different types of graduates hired in 2009-2012**



**Figure A1-4: Share of firms reporting how skills of recent university graduates hired in 2009-2012 compare with similar graduates from 10 years ago (N = 206)**



12. **Satisfaction with and importance of various skill categories.** The survey asked employers to rate their satisfaction with recently hired university graduates in each of several individual skill categories. By adapting the categorization scheme used by Blom and Saeki (2011), the survey asked employers about 12 categories of general (“soft”) skills, 14 categories of specific (“professional”) skills, and 6 categories of technical skills (for engineering graduates only). The survey also asked employers to rate the importance of each skill for newly hired university graduates. The importance and satisfaction of each skill were assessed on a five-point scale, where 1=“not at all” and 5=“extremely”. The size of the gap between the two scores (usually negative) is considered to be the “skill deficit” in a particular skill category.

13. In assessing graduate qualities within individual skill categories, employers report highest levels of satisfaction with graduates’ Uzbek language and computer skills and lowest satisfaction with English language skills (see Figure A1-5). However, employers also rate English language skills as being the least important. When importance of particular skills is taken into account, the largest skill deficits are found in the area of Russian language skills and the majority of “soft skill” categories. In particular, employers

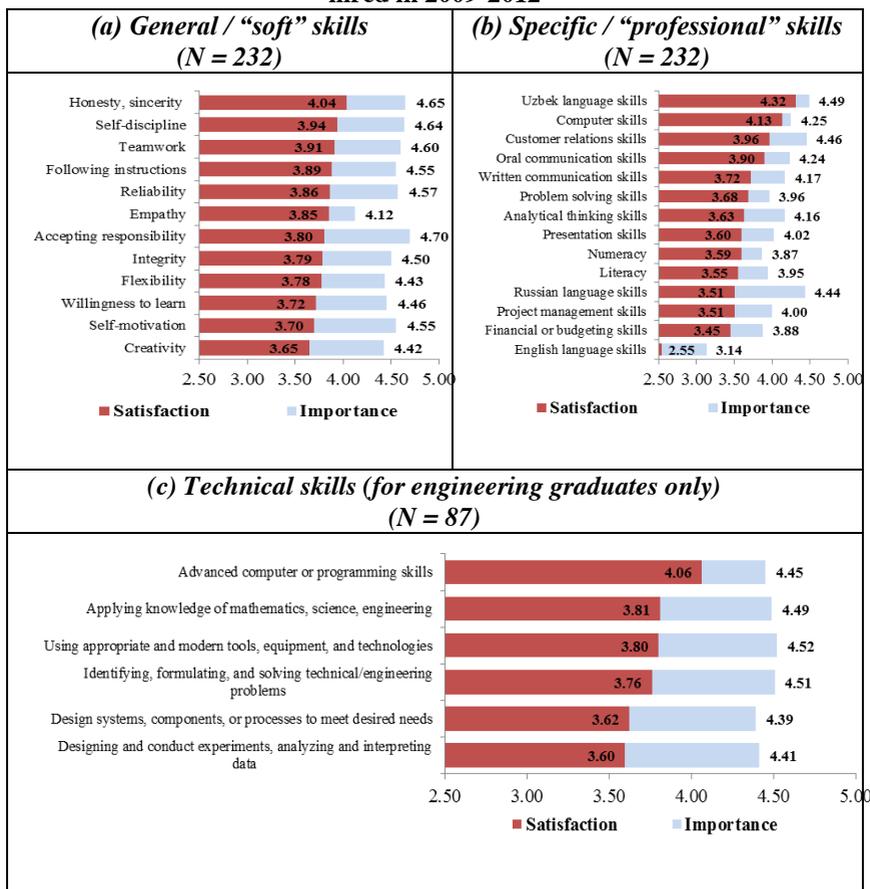
report that “accepting responsibility for one’s actions”, “self-motivation”, “creativity”, and most other soft skills are severely lacking among Uzbekistan’s recent university graduates. The smallest skill deficits were observed in the “empathy” category, judged least important by employers among all soft skills, as well as within computer and Uzbek language skills, which received the highest satisfaction scores among professional skills.

14. On average, employers gave greater importance to general/soft skills (mean importance score = 4.52) over specific/professional skills (4.07).<sup>73</sup> Despite slightly higher satisfaction levels with soft skills (mean satisfaction score = 3.83 versus 3.65 for professional skills), the average skill deficit was substantially higher among soft skills (mean skill deficit = -0.69 versus -0.42 for professional skills). These results underscore the importance of “soft skills” (sometimes also called non-cognitive skills), which are valued by employers but are rarely taught in formal education institutions.

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<sup>73</sup> A t-test conducted on the null hypotheses that “General and specific skills are equally important / satisfactory” revealed statistically significant differences in the average importance and satisfaction levels between the two types of skills ( $p < 0.001$ ).

**Figure A1-5. Average importance and satisfaction levels reported by employers for various categories of skills of recent university graduates hired in 2009-2012**



*Note: Employers were asked to assess their satisfaction with and importance of various skills of recently hired university graduates according to the following scale: 1=“not at all”, 2=“not very”, 3=“somewhat”, 4=“very”, 5=“extremely” satisfied/important.*

15. The survey’s results also point to large skill deficits among Uzbekistan’s engineering graduates. Of the six technical skills evaluated by employers, all but one (“advanced computer or programming skills”) received low satisfaction scores. Chief among these was the “ability to design and conduct experiments, as well as to analyze and interpret data”, a higher-order

cognitive skill that received the lowest average satisfaction score (3.60) and the largest skill deficit (-0.82) among all technical skills. The results of employer skill assessments for Uzbek engineering graduates were also compared with similar studies conducted for engineering graduates in India and the United States.<sup>74</sup> These comparisons revealed that employers in other countries value roughly the same skills in their engineers as the employers in Uzbekistan (see Table A1-2).

**Table A1-2. Share of employers rating certain technical skills as “very” or “extremely” important for recent engineering graduates in Uzbekistan, India, and the United States**

<i>Technical Skill</i>	<i>Uzbekistan</i>	<i>India</i>	<i>United States</i>
Ability to apply knowledge of mathematics, science, engineering	86%	85%	78%
Ability to use appropriate and modern tools, equipment, and technologies specific to their jobs	87%	83%	77%
Ability to identify, formulate, and solve technical/engineering problems	87%	80%	86%
Ability to design systems, components, or processes to meet desired needs	83%	75%	66%
Ability to design and conduct experiments, as well as to analyze and interpret data	85%	83%	59%
Advanced computer or programming skills	91%	n/a	n/a

*Note: n/a = not available.*

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<sup>74</sup> As cited in Blom and Saeki (2011). The caveats discussed in that paper about comparing survey results across countries (namely the differences in survey methodology and respondent expectations) also apply here.

## *Qualitative findings*

16. **In-depth interviews with 18 employers were conducted during the data collection process, serving as the basis for the preparation of sector case studies.** The objective of these case studies was to gain a better understanding of the nature of challenges related to the recruitment, hiring, and training of specialists with higher education. The case studies were grouped into three broad sectoral categories. Group 1 included consumer goods manufacturers (except the food industry) and equipment suppliers. Group 2 covered healthcare establishments. Group 3 included different types of enterprises providing technology solutions in construction and other industries.

### **Case study 1: Manufacturers of consumer goods and car parts**

17. **Recruitment and hiring of graduates.** Large companies and international joint ventures are more likely to recruit students still in university for practical training programs (internships); from this pool of trainees, they then select graduates to hire on a permanent basis. These companies are also more likely to pay the tuition costs of talented employees who then commit to working for the company upon graduation. Smaller domestic firms are less likely to employ these recruiting tactics; they rely more often on placing job advertisements in the mass media.

18. **Skills of recent graduates.** The skills of vocational college graduates are universally derided. On the other hand, employers are split on the quality of skills among higher education graduates. Some employers report general satisfaction with university graduates' skills and see their skill levels improving over time; others believe the quality of higher education is stagnating or worsening. Some complain about the lack of practical job skills taught at universities:

*“Diplomas do not help the graduates to understand our manufacturing. Graduates cannot answer elementary questions about production.”*

*--Deputy CFO, knitted clothing firm*

Others blame a worsening quality of teaching at universities and a misalignment of graduate profiles with the needs of the economy:

*“There are too many would-be economists, lawyers, and nurses. Where are the engineers, carpenters and milling*

*machine operators? We do not prepare a future generation of engineering staff.”*

*--Assistant production manager,  
electronic auto parts manufacturer*

They also identify low levels of international relevance of higher education, including the ability of graduates to speak foreign languages (English and Russian) and possess knowledge of the latest international standards:

*“All graduates from institutions of higher education lack proficiency in foreign languages. ... Today’s graduate seems to have heard nothing of the latest international standards. International standards study must be introduced into our education system.”*

*--Assistant production manager,  
electronic auto parts manufacturer*

In this respect, the Turin Polytechnic University in Tashkent received special praise from employers:

*“Theory and practice must go together. Such a connection, in my opinion, is observed at Turin Polytechnic Institute. Its undergraduates can practice their professional skills during summer internship/apprenticeship with our company. ... The institute’s graduates are well qualified, good at computing and foreign languages.”*

*-- Chief HR officer,  
auto parts and consumer goods manufacturer*

19. **Training of personnel.** The method and availability of training for staff varies widely according to the type of enterprise and level of workers. For larger joint ventures, training is mandatory for new hires and focuses mainly on instructing staff about safety-related and company regulations. Mid-career training/retraining is offered on a regular basis either on-site or at various training institutes. Specialists with higher education typically attend training full-time, while production workers and technicians receive part-time or on-the-job training. In such companies, training costs are paid in full by the employer and employees’ skills are assessed as a result of the training. Successful performance typically leads to salary increases or promotions. In smaller domestic companies, on the other hand, training is provided on a more ad-hoc basis. Training plans rarely exist and the majority of learning takes place on the job.

20. **Cooperation with higher education institutions.** Some firms, in particular foreign joint ventures, currently do or attempt to cooperate with higher education institutions. This is typically done by offering summer internship opportunities to students in selected fields (the best students are then offered jobs by the employer) or by sending enterprise employees to study at universities with their tuition paid by the employer (such employees must commit to work for the employer upon graduation). For industrial enterprises, these partnerships are often formed with polytechnic institutes, such as Turin Polytechnic, Ferghana Polytechnic, or the Andijan Machinery Institute. However, other forms of cooperation have met with limited success:

*“Some time ago we approached the Machinery Institute with an offer of cooperation. We put forward our terms and suggestions about the preparation level of graduates and research work. We insisted on introducing English as the working language. ... However, no actual steps have been made so far. ... Institutes’ representatives come to see us; we come up with ideas on their offers, after the discussion the representatives just disappear.”*

*--Assistant production manager,  
electronic auto parts manufacturer*

Many employers voice a desire to be more involved in the educational process by having the ability to influence educational curricula to bring them more in line with employers’ needs. However, most firms lament that they currently have little say in the educational process:

*“We wish we could influence the preparation of specialists at our colleges and institutes; it would inevitably lead to the improvement of graduates’ professional skills. Unfortunately, it is never done.”*

*--Deputy CFO, knitted clothing firm*

The main reason cited for this lack of cooperation on educational curricula is the low level of interest from higher education institutions to partner with businesses in this area. Firms generally believe that it is the education system’s responsibility to initiate such cooperation, either through individual institutions or through the sector Ministry. However, a smaller number of firms prefer a more hands-off approach:

*“We do not need any partnership with educational institutions. We do not need troubles with graduates and summer training. ... Would-be employers cannot and must not influence the preparation policies of higher education institutions. The problem is to be addressed by such institutions and the Ministry of Education.”*

*--Director,  
furniture repair and construction service*

## **Case study 2: Healthcare establishments**

21. **Recruitment and hiring of graduates.** All medical establishments interviewed report dire shortages of qualified medical professionals in the Uzbek labor market. Despite high demand for specialists with university degrees (80-90 percent of positions in the sector require higher education), the country’s education system currently produces too many nursing graduates from vocational colleges and too few medical professionals from higher education institutions. Among the reasons cited for these shortages are restrictive admission quotas, post-graduation employment restrictions, financial constraints, and geographic imbalances:

*“Our system of healthcare is faced with a serious staff problem. In my opinion, a marked lack of qualified medical specialists is common to all regions. Rural areas are badly in need of qualified doctors. The numbers of higher education graduates and [vocational] college leavers are poorly balanced: whereas we need more doctors, there is a clear overproduction of the auxiliary medical personnel.”*

*--Chief HR officer,  
regional health department*

*“In the future hospitals will be suffering from shortages of personnel. Under the operating regulations, upon graduation from a Bachelor’s program, a doctor can be hired only by outpatient medical establishments [policlinics]. Only those with at least a Master’s degree can be considered eligible to work at hospitals. However, very few graduates can get into a Master’s program.”*

*--Head physician,  
municipal policlinic*

*“In 10-15 years’ time, we will be facing a disastrous lack of doctors.”*

*--Deputy chief physician,  
regional hospital*

Healthcare establishments also complain of a lack of specialists in particular medical fields. Some blame the inability of medical training curricula to adapt to the changing needs of the profession:

*“We find it rather difficult to fill the positions of sanitation doctors, epidemiologists, and infection/virus experts. Over the past years the output of such specialists has been cut significantly. It is really hard to find a doctor who is qualified by his/her institution in sanitation of HIV/AIDS prevention. I am aware of the fact that pathologists and forensic experts are prepared in insufficient numbers.”*

*--Deputy chief physician,  
regional HIV/AIDS center*

*“In recent years higher medical education is getting focused on preparation of general practitioners. As a result, we observe a serious shortage of such specialists as intensive care anesthetists, narcologists, psychiatrists, phthisiologists and pulmonologists.”*

*--Deputy chief physician,  
regional HIV/AIDS center*

*“We have got an excellent imported piece of equipment but very few specialists to work with it.”*

*--Department chief physician,  
regional perinatal center*

Despite the pronounced lack of qualified medical specialists, healthcare institutions did not report taking active steps to seek out or recruit the best medical graduates. Instead, they rely on regional or national administrative bodies to allocate the existing medical graduates among the respective institutions. As a result, many graduates remain concentrated in urban areas and some choose to join private practices.

22. **Skills of recent graduates.** Medical graduates get high marks from employers for their strong command of the Uzbek language, good computing skills, and the willingness of young doctors to provide patients with help and

understanding. Other skills are rated poorly, with knowledge of relevant laws and regulations and managerial competencies receiving the lowest marks. Practical skills of both higher education and vocational college graduates are also called into question:

*“For some reason, medical students do not study medicine-related laws and healthcare regulations. Nor are they provided with basic rules on work in a medical establishment.”*

*--Chief physician,  
municipal policlinic*

*“It should be strictly prohibited to hire a medical [vocational] college graduate unless he does a full course of nursing under the Academy of Medicine. There are no educational conditions for practicum at the colleges. The nurses they send us possess neither skills nor qualification.”*

*--Deputy chief physician,  
regional HIV/AIDS center*

23. **Training of personnel.** Training courses are compulsory for all medical staff. The content and eligibility for these courses are standardized by a regulation of the Cabinet of Ministers:

*“Compulsory training for doctors (288 hours) and the nursing staff (144 hours) [every five years] is divided into two parts: full-time courses and on-the-job training. Additionally, there are intern programs in institutes for which certified doctors and Master’s degree seekers are eligible.”*

*--Chief HR officer,  
regional health department*

Additional specialized training courses are often offered by individual healthcare institutions to their staff. These may be conducted on the job or take the form of off-site training seminars of varying lengths:

*“Every year we submit an advanced training plan aimed at meeting our needs to our regional department.”*

*--Deputy chief physician,  
regional perinatal center*

*“Our doctors do the advanced training courses for doctors in the corresponding institute in Tashkent and Samarkand. Nurses and nurse practitioners attend the nursing courses in Samarkand’s specialized establishments. Courses on HIV/AIDS prevention are conducted by our own staff.”*

*--Deputy chief physician,  
regional HIV/AIDS center*

Upon completion of training courses, participants are evaluated through multi-stage assessments. These are conducted by the trainers at the courses themselves, followed by the employers of the trainees, as well as district and regional health centers, which provide attestation for the completed courses.

24. **Cooperation with higher education institutions.** Healthcare establishments frequently cooperate with medical training institutions (both in higher and specialized secondary education) by providing practical training to students of medical faculties and vocational colleges. This cooperation is done within the framework of state healthcare programs. As a result of the highly centralized management of the education healthcare sector, medical service providers do not typically initiate partnerships with education providers unless compelled to do so by government directives.

*“Our cooperation with medical educational institutions mostly is specified in the regulations of the Ministry of Health. We do not have special procedures to attract job candidates out of medical schools.”*

*--Deputy chief physician,  
regional perinatal center*

Cooperation between medical establishments (employers of medical graduates) and educational institutions (producers of these graduates) is further complicated in cases where the educational institutions are subordinated to ministries other than the Ministry of Health. Although scientists affiliated with educational institutions occasionally conduct research in hospitals, healthcare establishments have little to no influence on how students are taught in medical faculties:

*“We cannot influence the educational process at medical institutes. I wish hospitals and other medical establishments could get considerable influence over how students are taught. It would enable us to get good specialists to hire. Unfortunately, such practice does not exist.”*

*--Deputy chief physician,  
regional HIV/AIDS center*

### **Case study 3: Providers of technology solutions to construction and other industries**

25. **Recruitment and hiring of graduates.** The majority of enterprises interviewed in this category were either public or public-private entities with the State being the main shareholder. As a result, these organizations reported having little trouble filling the few vacancies that they tend to have every year. Because of stable employment and attractive wages, staff turnover in these organizations is low. And when graduates are needed, state regulations often give the managers of public enterprises little discretion when it comes to hiring:

*“We don’t have any problems with hiring specialists with higher education. We almost never have vacant professional posts. We hire trained specialists. But our staff turnover is low, and the manning table does not allow us to hire new employees every year.”*

*--Head of HR department,  
State agency in the construction sector*

University graduates in such organizations are often hired on the basis of references of their supervisors during their internships within the organization. Because supply of available graduates for these positions exceeds demand, employers prefer students who complete their thesis or diploma project during their work for the organization. State-owned enterprises also benefit from graduates allocated to them by sector administration authorities whose tuition is financed from the state budget:

*“Every year we prepare a list of needed specialists of different specializations and qualifications, and submit it to Uztransgaz, which maintains contacts with educational establishments and arranges placement of graduates. We can also hire graduating students whose tuition was paid from the State budget, if they are referred to us by universities.”*

*--Inspector of HR department,  
State-owned natural gas transportation company*

Private enterprises, which cannot rely on the mechanisms of the State to provide them with the necessary trained graduates, have to use a wider range of staffing methods. In addition to internship-based recruitment, these include

working with university administrators to identify talented students, placing advertisements in the mass media and through recruitment agencies, as well as partnering with the firm's contractors and related organizations to pool the necessary expertise within the industry.

26. **Skills of recent graduates.** Public and state-owned enterprises tended to give a more positive evaluation of graduates' skills than private sector firms. In particular, they praised the computer literacy and English language proficiency of recent graduates. While graduates may possess a high degree of theoretical knowledge, they noted that practical know-how was lacking in many cases:

*“University graduates are now very competent, they get a good education. As compared to the older generation, they are much more advanced in using computers, many of them speak English. So, in general, they are well prepared for work.”*

*--Inspector of HR department,  
State-owned drilling and drainage construction company*

*“Young people have good theoretical training, that is in general fundamental education. But this education does not always meet today's job requirements, in practice it may be irrelevant. So, young people know the theory, but they lack the know-how.”*

*--Inspector of HR department,  
State-owned natural gas transportation company*

*“We need to develop project-based education, which means giving students projects to work on. The work on the project should include the following educational tasks: to formulate a problem, to develop a methodology for solving the problem, to identify the project outcome. The final product of several students' joint work must include specific recommendations and proposals on solving the problem that the project aimed to address.”*

*--Principal engineer,  
State-owned institute providing construction engineering  
services*

However, private firms express less positive views about the skills of graduates available to them. In particular, they fault the mismatches between what is taught at universities and the demands of real life:

*“Even when we hire university graduates, we retrain them because universities do not give the level of knowledge that is required for work in our company. ... Specialists have to be trained based on requests from employers. The low level of graduates’ training has a negative impact on efficiency of organizations.”*

*--HR manager,  
Private company providing internet and telephony services*

27. **Training of personnel.** State-owned engineering and construction enterprises organize short-term (one or two day long) seminars to inform their employees about changes in relevant standards and regulations, train them in new technologies or safety rules, etc. These entities generally do not have formal legislative requirements governing personnel training and few have formal training plans. They generally do not conduct training needs assessments or evaluate training results, since employees’ salaries and promotions are not tied to receiving this training. Employees often attend workshops and conferences organized by the respective ministries and agencies that govern the sector. Private companies and state-owned enterprises in other sectors take a more formal approach to training, requiring employees to go through periodic certification exercises that may impact the workers’ salary levels.

28. **Cooperation with higher education institutions.** State-owned enterprises in the construction industry often go beyond just offering internships to university students. These organizations engage in joint research projects, seminars, competitions, lectures, and consultations with higher education institutions. These partnerships are often managed by the state entities charged with governing the respective industry:

*“We collaborate with the Architectural Institute and Technical University. ... Together with our partner universities we implement joint research projects. Besides, students from these higher educational establishments can take an internship in our Center.”*

*--Head of HR department,  
State agency in the construction sector*

*“Our collaboration [with universities] is not limited to training of specialists and internships. Our experts participate in seminars organized by universities. These days educational establishments organize various contests and invite us to take part as participants and co-organizers.”*

*--Principal engineer,  
State-owned institute providing construction engineering  
services*

Despite the high degree of cooperation between state-owned entities and the sector-specific higher education institutions, these enterprises see a limited role for themselves in being able to influence the quality of higher education. While some respondents voice their readiness to work together with universities in reforming educational curricula (by making them more practical and focused on real world applications), others see no need for their involvement in shaping educational policies:

*“Unfortunately, we cannot influence the training of specialists in universities. We can give our recommendations on how the educational process should be organized, for example, to increase the number of hours allocated for selected course in narrow specializations. Everyone knows that our universities are using slightly outdated methodologies. It would be excellent if higher education establishments used requests from employers as guidance in development of their curriculum and especially when deciding on the number of hours for courses.”*

*--HR manager  
Private company providing internet and telephony services*

*“Presently, employers cannot have influence on training of specialists in higher education establishments. In any case, this does not seem necessary to us. We do not have a shortage of experienced specialists; besides, new specialists graduate from universities every year.”*

*--Principal engineer,  
State-owned institute providing construction engineering  
services*

## Annex 2: Survey questionnaire

INN: \_\_\_\_\_ ID. Questionnaire number: \_\_\_\_\_

### Questionnaire to Assess Employer Satisfaction with Qualification of University Graduates

Hello, my name is \_\_\_\_\_, I work in \_\_\_\_\_. Our organization was commissioned by the World Bank working in consultation with the Ministry of Higher and Secondary Vocational Education to conduct an assessment of the quality of education provided by higher education institutions of Uzbekistan. For this purpose, we prepared a questionnaire, and we would like to ask you to answer its questions. Your opinion regarding the knowledge and skills of university graduates will help us develop recommendations for improvement of the educational process.

#### Q. COMPANY PROFILE

Q1. Company name

Q2. Region

Q3. Company address

Q4. Contact information (telephone, fax, email)

Q5. Company head officer

Q6. Survey respondent(s) (name(s), job title(s), contact information)

IT IS ADVISED THAT THE QUESTIONNAIRE IS ANSWERED BY THE FIRM'S HUMAN RESOURCES OFFICER AND EITHER ITS HEAD OFFICER OR THE HEAD OF DEPARTMENT WITH THE HIGHEST NUMBER OF GRADUATES HIRED.

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_

Q7. Company registration year

Q8. Company's main fields of activity: \_\_\_\_\_

Q9. Has your company hired new university graduates during the past 4 years (2009-2012)?

Yes 1

No 2 → END OF THE SURVEY

Q10. Form of ownership: 1 - private 2 - public

Q11. Company size: 1 - micro/small 2 - large

Q12. Sector of economy (according to quota): 1 - Industry  
3 - Construction, transport, communications 4 - Trade and public catering 5 - Social services (healthcare, sports, social security, private education, culture, science) 6 - Other services

**GENERAL INFORMATION**

NOTE: EMPLOYEES SHOULD BE CONSIDERED AS GRADUATES ONLY IF THEIR CURRENT EMPLOYMENT IS THE FIRST PLACE OF WORK AFTER COMPLETION OF A HIGHER OR SECONDARY EDUCATIONAL INSTITUTION.

	Number of people
<b>A1. Total number of employees</b>	
<b>A2. Number of employees with a university degree (approximate)</b>	

	a. During past four years (2009 - 2012)	b. During the last year (2012)
<b>A3. Number of employees hired</b>		
<b>A4. Number of university graduates hired</b>		
<b>A5. Number of academic lyceum graduates hired</b>		
<b>A6. Number of vocational college graduates hired</b>		

**A7. Does your company find it difficult to hire sufficient numbers of qualified specialists with higher education?**

Yes ..... 1  
 No..... 2 → A9

**A8. Why does your company find it difficult to hire sufficient numbers of qualified specialists with higher education? MULTIPLE RESPONSES ARE ALLOWED**

The labor market does not supply enough specialists of the required specialization.....1  
 The labor market does not supply enough specialists with the necessary qualifications.....2  
 The labor market supplies enough specialists with the required specialization and qualifications, but they demand higher wages than our company can pay.....3  
 Other reason, describe \_\_\_\_\_

**A9. Does your company provide formal training for its employees?**

Yes, for specialists with higher education and for other qualified specialists.....1  
 Yes, only for the specialists with higher education.....2  
 Yes, only for the specialists with secondary education and for other qualified workers.....3  
 No.....4

**A. OVERALL SATISFACTION WITH GRADUATES' SKILLS**

REMINDE THE RESPONDENT TO ASSESS GRADUATES' SKILLS AS OF THE TIME THEY WERE HIRED WHEN ANSWERING ALL QUESTIONS IN THE BLOCK

**B1. How satisfied are you with the overall level of skills of all new graduates hired in the past 4 years (2009-2012)?**

		Not at all	Not very	Somewhat	Very	Extremely	Not hired such category
a.	Academic lyceum graduates	1	2	3	4	5	9
b.	Vocational college graduates	1	2	3	4	5	9
c.	University graduates	1	2	3	4	5	9
d.	All new graduates	1	2	3	4	5	

**B2. How do the skills of university graduates hired in the past 4 years compare to those of similar graduates 10 years ago?**

- Worse today.....1
- About the same.....2
- Better today.....3
- Don't Know.....9

## B. GENERAL SKILLS OF UNIVERSITY GRADUATES

**C1. Rate the importance of general skills/personal characteristics for successful job performance for positions that university graduates occupy.**

**C2. Rate the satisfaction with general skills/personal characteristics of university graduates hired during the past 4 years (2009-2012).**

		C1. Rate importance of skills					C2. Rate satisfaction with graduates' skills				
		Not at all	Not very	Somewhat	Very	Extremely	Not at all	Not very	Somewhat	Very	Extremely
a.	Flexibility (responsiveness to change)	1	2	3	4	5	1	2	3	4	5
b.	Creativity (finding new approaches to solving problems)	1	2	3	4	5	1	2	3	4	5
c.	Empathy (understanding the position, feelings, or motives of others)	1	2	3	4	5	1	2	3	4	5
d.	Reliability (being dependable to complete assignments)	1	2	3	4	5	1	2	3	4	5
e.	Integrity (understanding and applying professional ethics in decision-making)	1	2	3	4	5	1	2	3	4	5
f.	Self-discipline (exhibiting control over personal behavior)	1	2	3	4	5	1	2	3	4	5
g.	Self-motivation (moving oneself to overcome obstacles)	1	2	3	4	5	1	2	3	4	5
h.	Teamwork (excelling at interpersonal relationships and helping others)	1	2	3	4	5	1	2	3	4	5
i.	Willingness to learn (being open to accepting new ideas)	1	2	3	4	5	1	2	3	4	5
j.	Understanding and following instructions and rules	1	2	3	4	5	1	2	3	4	5
k.	Accepting responsibility for one's actions	1	2	3	4	5	1	2	3	4	5
l.	Honesty, sincerity	1	2	3	4	5	1	2	3	4	5

### C. SPECIFIC SKILLS OF UNIVERSITY GRADUATES

**D1. Rate the importance of specific/professional skills for successful job performance for positions that university graduates occupy.**

**D2. Rate the satisfaction with specific/professional skills of university graduates hired during the past 4 years (2009-2012).**

		D1. Rate of importance of skills					D2. Rate satisfaction with graduates' skills				
		Not at all	Not very	Somewhat	Very	Extremely	Not at all	Not very	Somewhat	Very	Extremely
a.	Oral communication skills	1	2	3	4	5	1	2	3	4	5
b.	Written communication skills	1	2	3	4	5	1	2	3	4	5
c.	Uzbek language skills	1	2	3	4	5	1	2	3	4	5
d.	Russian language skills	1	2	3	4	5	1	2	3	4	5
e.	English language skills	1	2	3	4	5	1	2	3	4	5
f.	Literacy (ability to read for knowledge, write coherently, think critically and implement)	1	2	3	4	5	1	2	3	4	5
g.	Numeracy (basic mathematics skills)	1	2	3	4	5	1	2	3	4	5
h.	Problem solving skills	1	2	3	4	5	1	2	3	4	5
i.	Analytical thinking skills	1	2	3	4	5	1	2	3	4	5
j.	Computer skills	1	2	3	4	5	1	2	3	4	5
k.	Customer relations skills	1	2	3	4	5	1	2	3	4	5
l.	Presentation skills	1	2	3	4	5	1	2	3	4	5
m.	Project management skills (planning, organizing, motivating, and controlling resources to achieve specific goals)	1	2	3	4	5	1	2	3	4	5
n.	Financial or budgeting skills	1	2	3	4	5	1	2	3	4	5

#### D. TECHNICAL SKILLS OF ENGINEERING GRADUATES

**E1. Has your company hired engineering graduates during the past 4 years (2009-2012)?**

Yes.....1

No.....2 → **END OF THE SURVEY**

**E2. Rate the importance of technical/engineering skills for successful job performance for positions that engineering graduates occupy.**

**E3. Rate the satisfaction with technical/engineering skills of engineering graduates hired during the past 4 years (2009-2012).**

		E2. Rate of importance of skills					E3. Rate with graduates' skills				
		Not at all	Not very	Somewhat	Very	Extremely	Not at all	Not very	Somewhat	Very	Extremely
a.	Ability to apply knowledge of mathematics, science, engineering	1	2	3	4	5	1	2	3	4	5
b.	Ability to use appropriate and modern tools, equipment, and technologies specific to their jobs	1	2	3	4	5	1	2	3	4	5
c.	Ability to identify, formulate, and solve technical/engineering problems	1	2	3	4	5	1	2	3	4	5
d.	Ability to design systems, components, or processes to meet desired needs	1	2	3	4	5	1	2	3	4	5
e.	Ability to design and conduct experiments, as well as to analyze and interpret data	1	2	3	4	5	1	2	3	4	5
f.	Advanced computer or programming skills	1	2	3	4	5	1	2	3	4	5

### **Annex 3: Turin Polytechnic University in Tashkent**

#### **A case study of a partnership between industry and academia in Uzbekistan**

Turin Polytechnic University in Tashkent (TPUT) was established in accordance with the Resolution # 1106 dated from April 27, 2009 of the President of the Republic of Uzbekistan “About the organization of the activity of Turin Polytechnic University in Tashkent”. The University is formed as a nongovernment and noncommercial



organization. The university was created by partnership of the MHSSE of Uzbekistan, Turin Polytechnic University (Italy), Uzavtosanoat and GM Uzbekistan, as well as other interested enterprises and organizations.

Turin Polytechnic University holds seventh position in Jiao Tong academic ranking among leading technical universities in Europe and first in Italy. Besides Turin and Tashkent, the University has its branches in Mondovi, Vercelli (Italy), Bielle, Grenoble (France), Lausanne (Switzerland), Alexandria (Egypt), Barcelona (Spain), and Shanghai (China).

The main task of the TPUT is to prepare highly qualified specialists for automobile and machinery industries, energy sector, civil and industrial engineering in accordance with programs approved in Turin Polytechnic University (The Republic of Italy), and universally recognized international requirements, as well as with the main goals and objectives of National program on personnel training of the Republic of Uzbekistan.

Establishment of TPUT is directly related with the opening of the Joint Venture “GM Powertrain” (See Box #1) between General Motors and “Uzavtosanoat” State Stock Company. Increased demand for highly qualified specialists of the new facility, which employs up to 1,200 people, led the sides to conduct detailed analysis on staff supply. First option was to send the specialists to Europe for training, but later it was decided to open a modern technical university in Uzbekistan and for this purpose, the cooperation with the Turin Polytechnic University was established.

With close support of the Uzbek Government, TPUT opened in 2009-2010, and was able accept 200 students, who would study in line with the curriculum and programs of Turin Polytechnic University in Italy relevant

to the State educational standards of Uzbekistan. Campus of the University was constructed and equipped within one year and started operating from September 2010 (total cost of the Campus construction and equipment was equal to 45 billion UZS).

The learning process is conducted in accordance with curricula developed in Italy by the leading university. They fully meet the Uzbek National program on cadres training and Bolognese process, that is generally acknowledged international standards of higher education. During the first year of studies, students learn in-depth technical terminology in English and the courses requested by the Uzbek standards, and starting from the second year they take professional courses from Italian professors (3 years).

Teaching staff includes both Uzbek and Italian tutors. Specialists from Italy, as a rule, are engaged in conducting lectures, while local tutors are engaged in organizing practical trainings and laboratory works. All tutors of the university have working experience in foreign higher education institutions.

### **Establishment of the University and its participants**

As mentioned above, the Resolution of the President of the Republic of Uzbekistan # 1106 dated from April 27, 2009 played a very important role in the establishment of the University. According to this resolution, the proposal to create Turin Polytechnic University in Tashkent city by participation of the MHSSE of Uzbekistan, “Uzavtosanoat”, GM Corporation and Turin Polytechnic University (Italy) was accepted and priority tasks on organizational measures were set. For the purpose of successful implementation of the resolution, organizational committee on establishing TPUT was formed (see Annex 1). In order to execute the specified tasks within the short period of time, number of government agencies and ministries contributed by completing their assigned undertakings (The decree # 130 dated from 05/05/2012 of the Cabinet of Ministers of the Republic of Uzbekistan). The roles of the main participants of this project specified by the decrees of the President of the Republic of Uzbekistan and Cabinet of Ministers of the Republic of Uzbekistan, is explained below:

1. State Property Committee of the Republic of Uzbekistan – Participated in evaluating the building complex located at 17 Navoi Street of Tashkent city together with the attached territory and transferring the property to “Uzavtosanoat” as state’s contribution in equity funds and later transferring the property to the balance of “Uzavtosanoat” for the purpose of its usage by the University on a free basis.

2. Tashkent city administration – solved the issues of relocating the organizations that were using the building complex prior to its transfer to “Uzavtosanoat”.
3. “Uzavtosanoat” – Acted as a customer in designing and reconstructing the buildings given to the University and later, transferred the title of customer to the University.
4. “Uzneftgazqurilishinvest” – Acted as a general contractor in construction of University buildings in accordance with the decree of the Cabinet of Ministers of the Republic of Uzbekistan
5. State Construction Committee – Ensured the verification of project-estimation documents on reconstructing the buildings given to the University by the state appraisal and imposed a quality control over the execution of construction works.
6. Organizational Committee, which consists of officials of the related government agencies and representatives of TPUT- Ensured quality control over the execution of reconstruction works, and ensured the provision of necessary furniture, modern teaching and laboratory equipment, computers and other technical equipment and library fund to the building provided to the University
7. MHSSE of Uzbekistan – Formulated organizational documents together with the Turin Polytechnic University (Italy), “Uzavtosanoat” and other interested parties and ensured its state registration in accordance with specified legislation. Academic curriculum and programs were formulated in agreement with the Turin Polytechnic University. The proposal on the number of students to be accepted on specified fields of studies for the next academic year is submitted to the Cabinet Ministers of the Republic of Uzbekistan until March 30 of each year in agreement with Ministry of Economy of the Republic of Uzbekistan.
8. Turin Polytechnic University –Oversees teaching methodology and conducts teaching process at the University based on the advanced pedagogic and information technology, and utilization of latest achievements in science and technology. Also, it contributed to the creation of library fund and supply of modern literature, creation of laboratory base and information center. It also has started to assist the University in preparing young national pedagogical specialists.

Uzbek government has granted the University an exemption from paying all forms of tax and excise duty on imports of office equipment, books and publications, and building materials for the first five years. Also foreign specialists of the University and their family members are exempted from paying consular fees for visas and some state duties.

### **Box #1. GM Powertrain Uzbekistan**

*In October 15, 2011 General Motors and its local joint venture partner UzAvtosanoat opened a new state-of-the-art engine plant in Tashkent, 400 kilometers from the automakers' vehicle manufacturing facility in Asaka. It represents GM's most significant powertrain investment in Central Asia.*

*GM has a 52 percent stake in GM Powertrain Uzbekistan and its partner has a 48-percent stake. The facility, which covers 40 hectares, is GM's first engine plant in Uzbekistan. It will produce more than 225,000 new fuel-efficient Ecotec 1.2L and 1.5L engines per year for use in GM small passenger cars sold around the world.*

*The plant features a lean manufacturing footprint and has adopted GM's advanced global manufacturing processes and technology. It is one of only a few GM powertrain plants in the world with co-located assembly and foundry facilities and will be Central Asia's only manufacturing plant capable of producing finished machined components such as cylinder heads, cylinder blocks and crankshafts.*

*The new facility, which employ up to 1,200 people, has adopted cutting-edge computer equipment to enhance precision and ensure high build quality and the flexibility to switch between production of engine variants in line with changing market demand.*

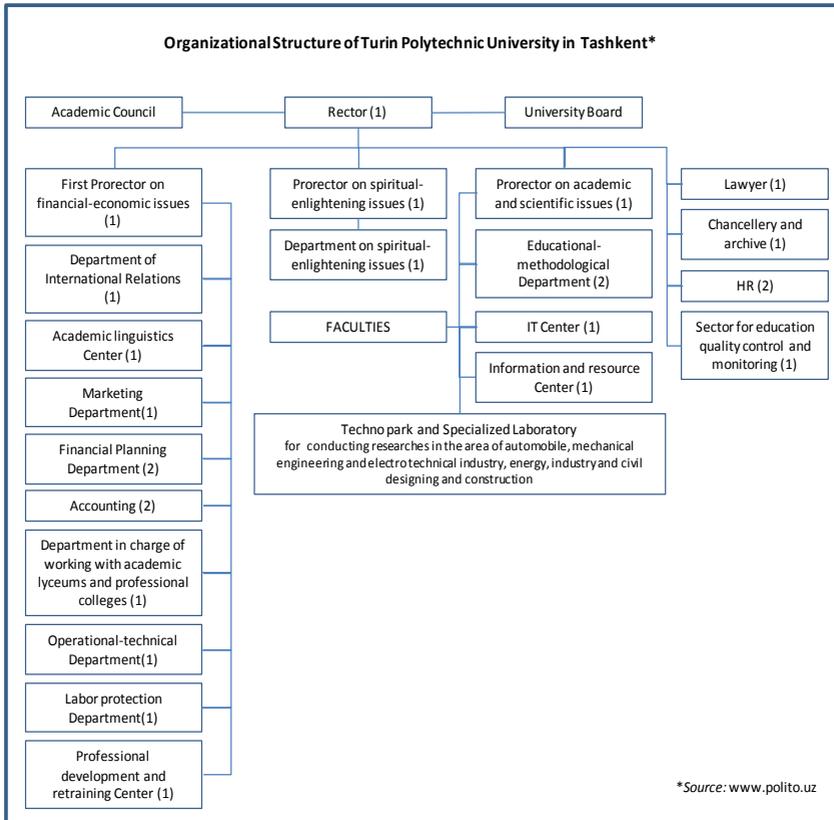
*The Uzbekistan plant joins facilities in China and Korea as a producer of GM's new Ecotec 1.2L and 1.5L engines. Both engines use a cast-iron block and aluminum head, with dual overhead camshafts and four valves per cylinder. They are both Euro V emissions compliant.*

*The engine facility is the second manufacturing joint venture between GM and UzAvtosanoat. GM Uzbekistan, located in Asaka, was established in March 2008 by the two companies. GM holds a 25 percent stake in the joint venture, with the remaining 75 percent held by UzAvtosanoat.*

*GM Uzbekistan employs approximately 6,600 people and produces more than 200,000 Chevrolet passenger vehicles annually for domestic sale and export to neighboring markets such as Russia and the Commonwealth of Independent States.*

*Several of the new engine plant's employees graduated from Torino Polytechnic University and three colleges in Tashkent, with which GM has partnered to help develop technical and managerial skills for the nation's automotive industry.*

## ORGANIZATIONAL STRUCTURE OF THE UNIVERSITY



The administrative management of the University will be carried out by the Uzbek side, specifically by 1st vice-rector on financial and economic issues.

Educational process of the University is managed by the Italian counterparts (Vice-rector on education Prof. Franco Lombardi). Provision of academic programs and teaching staff is conducted through service and license agreements signed with the Turin Polytechnic University.

The selection of teaching personnel consists of three stages:

- 1) Vacancy Announcement (through mass media, internet, etc.);
- 2). Short listing of potential candidates;
- 3). Individual interviews by Italian and Uzbek sides.

Non teacher staff will be hired by the HR department of the University following Uzbek legislation.

The program on replacing the positions of Italian teachers by Uzbek experienced teachers is also under the progress. The targeted proportion of teaching staff is 80 percent local and 20 percent Italian. Therefore, each year students from Uzbekistan are sent to Italy to continue their postgraduate and PhD studies and for other retraining purposes. Currently, 9 specialists are pursuing their education in Turin.

## **FINANCING**

According to the Article 5 of the Decree # 1106 of the President of the Republic of Uzbekistan, financing of the University is done based on the followings:

- Funds received through tuition fees, including student educational grants provided by other interested organizations in accordance with the appropriate agreements between students and interested organizations
- Other funds attracted by decrees of the Board of the University (Annex №2), sponsorship funds and other funds not prohibited by legislation.

Tuition fee for students studying on contractual fee basis is 4500 US dollars per year.

University budget is approved by the Board of the University.

TPUT makes additional 300 million Uzbek sums by providing other services. This mainly includes research activities, performing orders of companies and organizations, and provision of additional courses on improving the qualifications of personnel.

## **COURSES OF THE UNIVERSITY**

It has been three years since the University started its activity, thus, currently students are enrolled in 4 types of specialization fields (majors) to receive their bachelor's degree. In 2013, first graduates of the University will be able to receive their diplomas in accordance with their field of study. At the same time, starting from 2013 the University is planning to accept students for its Master's degree program.

TPUT prepares specialists in the following fields:

1. Mechanical Engineering
2. Energy Engineering
3. Civil-Industrial Engineering and Architecture
4. Information technologies and programming Industry

## **Mechanical Engineering**

Preparing specialists directed to work in all spheres of mechanical engineering including agricultural engineering and metallurgy industry having a knowledge of modern techniques and technology, modern equipment of construction-technological and automatized process as well as exploitation and service of techniques in the sphere of mechanical engineering.

The Bachelor course in Mechanical Engineering is aimed at training a professional figure with a solid technical background in areas related to industrial engineering and specific expertise in mechanical engineering, with a focus on basic concepts and methodological aspects.

More specifically the program is intended to provide:

- Knowledge of the physical and chemical background as well as mathematical and informational tools for engineering applications;
- Knowledge of basic techniques and methodologies used in industrial engineering;
- a good level of knowledge and skills in specific areas of mechanical engineering: materials, design methods, thermo-fluid dynamics, fluid and heat machines, production technologies, industrial equipment and related technical services;
- Ability to work independently and collaborate effectively even in interdisciplinary working groups;
- Ability to interface, using appropriate technical language and knowledge of basic concepts, with specialists from other engineering fields;
- Ability to deal with change, and strong motivation to stay abreast of new developments and adapt to various industrial situations.

Achieving these objectives will enable graduates to continue their studies with an adequate background, or to integrate quickly into the workplace by virtue of their capacity to continuously upgrade their skills and adapt to various professional contexts.

## **Energy Engineering**

Preparing specialists on energy and electronic techniques for energy enterprises and metallurgy industry with knowledge of modern techniques and technology in traditional and alternative energy.

The professional profile of the energy engineer falls within the more general area of industrial engineering. Training must provide the skills and cognitive tools, which enable energy engineers to study and manage components, equipment and systems for the generation and use of thermal, mechanical and electrical energy from both fossil and renewable sources, as well as assess the resulting safety and environmental impact concerns. They must also have competences in planning and rational use of energy in the industrial, civil, agricultural and transportation sectors.

The program is strongly interdisciplinary and cuts across the various fields of industrial engineering, providing a solid grounding in applied thermodynamics and heat transfer. Specific courses give students the skills they will need to understand and manage the main types of industrial and civil energy plants, as well as the basic notions of classical nuclear technologies.

### **Civil-Industrial Engineering and Architecture**

Preparing specialists with knowledge of modern techniques and technology of construction and building materials, modern architecture, economics and organization of the production of industrial and civil engineering.

The objective of the Bachelor degree course in Architecture and Civil Engineering is to train students to become construction engineers, teaching them the necessary skills and functions to perform that role competently. This engineer works mainly in the field of building design, in its realization in traditional and industrialized construction sites, both for new constructions and the recovery of existing buildings; in real estate management and organization; in managing and organizing the construction process with regard to materials, products and components; and surveying and assessing the built heritage. The construction engineer is aware of the complexity of the construction system, in relation with its subsystems and with the environmental context, and has the skills to manage it. The construction engineer with a Bachelor degree collaborates in designing complex projects and independently designs simple projects.

The three-year program is designed to give students the methodological and operative tools they will need for immediate employment, in positions of support to the activities described above, or to continue their education in the two-year Masters course. Starting from a solid formation in basic sciences, students receive instruction that builds an engineering background founded on the basic notions of construction, followed by specific training in civil engineering. This includes both theoretical and applicative elements which

will be a point of reference both in future professional activities and in the MSc degree course.

To complement these skills, and taking into account the impact that major civil works have on the territory, the program also provides basic instruction related to safety and civil defense.

### **Information technologies and programming Industry**

Preparing specialists with knowledge of system programming and means in the spheres where computer technologies, automated systems of controlling, experimental-construction and practical workings are applied.

Everyone is aware that the explosion of information technologies has now permeated every aspect of our lives. The BSc course in Computer Engineering aims to form technicians who can utilize and innovate tools of information and communication technologies (ICT) using a typical engineering approach to address issues common to a very broad spectrum of applications. This engineering approach, combining theoretical and applicative aspects, characterizes and differentiates this course of study from other degree programs offered by the University in the computer field. It focuses on the approach to problem solving demanded by a rapidly evolving society and a market that is turning increasingly global.

The themes that characterize the computer engineers training range from the development of computer systems for businesses, to automation in industry and services, multimedia applications, robotics, intelligent systems and the development of telematics systems.

The training enables graduates to interact with specialists in all engineering fields, in particular with other information professionals, but also specialists in the economic-management area and all those who increasingly use these technologies, such as doctors and lawyers.

The information skills taught during the programme include the basic principles of the architecture of computers and computing systems, problems related to the design and integration of hardware and software systems in modern information processing systems, and extensive knowledge of operating systems, programming languages, techniques and methods of software engineering, principles and technologies for modeling, designing and managing databases.

### **ADMISSION**

The admission process to TPUT as well as attestation of its graduates is conducted at Turin Polytechnic University through the agreement with the

MHSSE of Uzbekistan and by following specified regulations. Until March 30 of each year, MHSSE of Uzbekistan, in agreement with the Ministry of Economy of the Republic of Uzbekistan, submits a proposal on the number of students to be accepted on specified fields of studies for the next academic and based on this proposal, the Cabinet of Ministers issues a decree on admission of students.

The number of students admitted to the University since 2009 is shown on the below table:

	Academic year	Total	Area of speciality			
			Mechanical Engineering	Energy Engineering	Civil-Industrial Engineering and Architecture	Information technologies and programming Industry
1	2009-2010	200	100	25	50	25
2	2010-2011	200	100	25	50	25
3	2011-2012	175	100	25	25	25
4	2012-2013	175	100	25	25	25
	<b>Total</b>	<b>750</b>	<b>400</b>	<b>100</b>	<b>150</b>	<b>100</b>

Unlike many other Uzbek higher education institutions, TPUT starts accepting documents earlier and acceptance is completed by July, The admission requirement are as follows:

1. English proficiency of the applicants- must be proved by means of IELTS Certificate with minimum level of 4.5 band, or TOEFL certificate with any of the following minimum levels: TOEFL Paper – 515, TOEFL Computer – 190, TOEFL IBT – 67. It is required because the preliminary examinations are conducted in English.
2. Candidates will be assessed by means of sets of multiple-choice tests including Math, Physics and Logic. The results of the examination usually will be announced between July 15 and July 20. All the testing papers will be provided from Turin and the scoring process of the answer sheets will be conducted in Turin as well.

## **FACILITIES OF THE CAMPUS**

### **Information Resource Centre**

IRC is considered to be the structure, which completely provides the opportunity for teaching staff and students to be acquainted with periodical literature. And also, it is a Spiritual and Educational, Intellectual and Cultural centre of the University.

## **Special Laboratories**

Practical classes on specialty subjects are conducted in special laboratories equipped with up-to-date training facilities based on automatics, hydraulics, pneumatics, mechanics, and working techniques.

Students have the possibility to study up-dated software, such as “CATIA”, “3D Max”, Auto CAD”, “ARHICAD” applied in designing and modeling. With the help of three-dimensional printer available for students it is possible to make a prototype of modeling details.

## **Techno Park**

Techno Park is equipped with real industrial facilities, which make it possible to conduct practical classes and test structural constructions and building material, as well as to study technological processes including cold metalworking, the work of machines with programmed numerical control and welding engineering.

## **Academic Linguistic Centre**

The Centre was established for the purpose of realizing additional educational programs to deepen students’ knowledge in foreign languages. University offers courses of English Italian, German, Japanese and other languages for external audience. Besides teaching languages, center puts the aim to improve professional and cultural levels of course audience.

## **Sport and creative life of the University**

There is a sport complex at the disposal of students, where they can go in for such sports as football, basketball, volleyball, judo, track and field athletics, swimming, shaping, bodybuilding directed to physical training and upbringing of young healthy generation.

With the view of students’ harmonious and all-round development, different circles are organized in the “Barkamol” center. Students actively go in for dancing, are involved in music, model different clothes, take part in creative contest, such as the best photograph, video reportage, dance, and so on.

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