

# **UNESCO: International Institute for Educational Planning**

## **Diversification of post-secondary education Azerbaijan**

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## **Chapter 1: Introduction**

Post-secondary education (PSE) follows secondary education in the hierarchy from lower to upper levels, as well as by number of institutions, by numbers of people involved and, probably, by size of this sector of education in general. At the same time PSE is much more colorful, diverse and manifold, as it contains various post-secondary, non-tertiary education institutions, including numerous vocational-technical schools; various non-university tertiary educational institutions, such as vocational schools, colleges, technicums, specialised secondary (middle) schools; higher education, multi-form institutions for undergraduate and graduate programs under a range of names, such as colleges, schools, conservatoires, institutes, universities, academies,...

Education is the most widespread sector of society, the most difficult and complicated area for reforms. The process of education continues through time, it is progressive in most of its characteristics and it is based on experiences and achievements of earlier periods. Trying to give a situational analysis of PSE in any country and to describe its vital problems is impossible without looking back at the history of the development and evolution of PSE in this country, without looking to the modern education systems of this globalised world, without a general philosophy and some technology of PSE, without looking at its future and proposing ideas for its further development.

The Republic of Azerbaijan is a newly independent, post-Soviet country with all the legacy of socialism, it is a country in the Caucasus with all the features of a specific, Caucasian culture, it was also a country of the Near East, part of Islamic civilization with a long history, it is and it was a country of meetings of various cultures, cooperations, various wars and conflicts. Azerbaijan is one of those unique countries where culture and geographic location combine to establish the role of a bridge between two sides, playing the role of the East in the West and the West in the East, as well as that of the South in the North and the North in the South.

Nowadays the Azerbaijani government stresses the role of oil resources, which is “black gold,” in the strengthening of human resources, human capital, i.e. “human gold” and the development of the non-oil sector. It has declared several ambitious programs, among them “turning black gold into human gold”. Here, without any doubt, the development of education will play a very special, leading role.

On November 2<sup>nd</sup> 2009, Azerbaijan, in the person of its President, announced that the Republic of Azerbaijan is at the end of its transitional economy, because all the main economic

indicators and development trends demonstrate the appearance and functioning of a pure, modern, market economy in Azerbaijan (published in newspaper “Xalq qəzeti”, November 3, 2009). At the same time a post-transitional country also has many problems similar to those of the transitional period to be discussed and solved. The prospects for building a post-transitional state with a strong economy, social security, democracy and a rich culture depend to a large degree on the development of education, particularly PSE as the main knowledge and skills creator, as developer of a modern knowledge economy and, in general, as a motor for change and progress in society.

During at least the last two centuries, societies and governments were engaged in struggling with illiteracy, trying to apply compulsory primary education, then compulsory lower secondary education and, in some cases, including Soviet Azerbaijan, even compulsory upper secondary education. **Access to education** was and is one of the most vital problems that has faced all governments. Now, in the era of a knowledge economy, access to postsecondary education has become of paramount importance. People with a secondary education are looking for training in order to gain necessary skills, looking for various forms of vocational education, specialised education and higher education with undergraduate and advanced degree programs. Modern highly diversified PSE allows people to meet their divergent interests in different types of training through an assortment of educational institutions. At the same time, people are looking for educational institutions with clear objectives and targets, for quality of training, for **quality of PSE** within public, private and other types of providers. And this long-wished-for quality task is in close organic connection with the **financing and management of PSE**. An acceptable-at-first approximate solution to gigantic problems by the provision of accessibility, quality and financing of PSE is dependent on political will and highly developed strategic and operational management within the country.

Azerbaijan was already the subject of one of six case studies launched by the International Institute for Educational Planning of UNESCO in January 1982 with the title “Public Education in Soviet Azerbaijan: Appraisal of an Achievement”. According to this project, in that time “This republic [...] has come an extraordinary distance in education” [1].

## **Development of post-secondary education (PSE) in the country**

A bird's eye view of the history of education, a glimpse at the past as a good jumping-off place, as a trampoline, we believe, helps us understand the development and problems of the country's whole education system. Before the final division of Azerbaijan between the Russian and Persian (Iranian) empires in 1828, the Azerbaijani education system was similar to those in other countries in the Near East (*the Period of the Middle Ages*). First of all, there were wide-spread primary and lower secondary schools (*mekteb* or *kuttab*) where curricula were based on both religious and secular subjects with primacy for the Quran. Graduates of a mekteb could enter vocational schools or continue their education in *madrasa* or other types of higher learning institutions (*halqas*, *zaviyas*, etc.). Vocational training was based on apprenticeship in the workshops in the bazaars, as well as outside, in manufacturing areas. Workers were organized in craft guilds with all kinds of human, social, business and government relations. Girls received training mostly in mektebs and in private schools located in houses. Limited numbers of exceptional girls could also enter vocational schools; girls, particularly, were admitted to arts schools in order, after completing the program, to rise in the estimation of persons of high rank after completing a program of music, literature and the arts [2].

In Azerbaijan in the early Middle Ages, the primary languages of instruction at educational institutions were Arabic and Persian; later the Azerbaijani (*Türk dili*, *Azeri*) language was also introduced gradually as a medium of instruction. In the 13<sup>th</sup> century, a great research, education and training center, with an observatory, was established in the Azerbaijani city of Maragha, near Tabriz. This center, where prominent scholars from all over the civilized world between Andalusia (Spain) and China, worked side-by side under the leadership of polymath Nasiraddin at-Tusi, distinguished itself in astronomy, geometry, trigonometry, engineering and physics, philosophy and ethics. However, a general decline in scientific research and education began in the Muslim world during the late Middle Ages. The number of high quality schools declined and higher learning institutions continued to exist only in important urban centers of the Muslim East.

After 1828, the north of Azerbaijan became part of Russia, while South Azerbaijan remained with Persia (Iran). Educational development in Northern Azerbaijan from 1828 to 1918 (*The Period of the Russian Empire*) was defined by a combination of national religious and secular schools as well as by Russian types of secular and bilingual schools. Academic programs and curricula for general and vocational schools were developed in a cooperative effort of Azerbaijani and Russian intellectuals and educators. These schools contributed to the rise of the

modern Azerbaijani enlightenment and intellectual elite. For higher education, students would mainly go to Russia and Europe, with some going to Near Eastern centers of higher learning.

Azerbaijan's 21 months of independence (*the Period of the First Republic, 1918-1920*), before the country became part of the Soviet Union, was not long enough to develop a national system of education, although for fairness' sake we have to mention that government's attempts to promote progress and innovations in the education sector. Baku State University, the first Russo-European style institute of higher learning was established in Baku in 1919 with the direct involvement and support of Russian scholars and educators. Also, about one hundred young people were sent to Europe for higher education.

Under the Soviet Union (*the Period of the Second Republic, 1920-1991*) the establishment, development and crisis of the whole, complex education system replaced each other as time went by.

The years 1920-1945 included the period of collectivisation in agriculture and the first phase of industrialisation, accompanied by the black pages of the “building of socialism”, as well as the elimination of illiteracy (as the first step in the *cultural revolution*), which led to a rise in literacy to 90% within 10-15 years [3], [1]. The training of the national teaching body at different levels, the establishment of a public education system as a whole and the development of all its divisions were carried out during the same period. The War of 1941-1945 emphasised the role of vocational education [4].

During 1920-1923 three more HEIs were established. HEI autonomy (autonomy, “that kind of situation, of course, was impossible to tolerate”) was abolished during 1922/1923, in spite of professors' opinions that such autonomy was not political, it was solely for academic and internal management issues.[3; pp. 97-98]. In 1928 Baku State University had six schools (faculties): physical-mathematical sciences, medicine, oriental studies, social studies, teacher training and law. So it was a real university in the Western sense of the word. The 1930s were a time of reorganization, mergers and separation for HEIs. After all the changes and restorations Azerbaijan State University (Baku State University before 1928 and after 1992) and the Azerbaijan Petroleum Institute (the Azerbaijan State Oil Academy since 1991) were the main research-oriented higher education institutions in Azerbaijan for many years. A very important step in solving vital teacher training problems was made between 1936 and 1940 with the introduction of two-year teachers' institutes in six regions of Azerbaijan. At the end of the 1920s, parallel to the Russian language, Azeri was introduced as a medium of instruction in all HEIs. Step-by-step Azeri became the main language of instruction in almost all Azerbaijan's educational institutions, with Russian coming second. To compare, let us remember that in the five Central Asian Republics, in contrast, the language of instruction in

higher education during Soviet times was primarily Russian. The HEIs' mission had three main components: teaching-learning, research and political education, specifically the "Propaganda of Leninism". From the beginning of 1939, the compulsory course "Essentials of Marxism-Leninism" was introduced into the programs of tertiary education institutions [3; p.207].

The main goals of Soviet and, particularly, Azerbaijani Education, Research and Development after 1945 were: completing the compulsory education system, promoting further industrialisation and correlating the development of education and science with this aim, developing the humanities and social studies in accordance with the chief ideas and principles of socialism, strengthening HEIs' physical plant, equipment and facilities, strengthening scientific research, including the establishment and further development of the Academy of Sciences etc.

According to the decree of the USSR Council of Ministers, "On Reforming the Leadership of the USSR Higher and Tertiary Education Institutions" in 1959, all higher and non-university tertiary education institutions were taken out of USSR central control and were placed under the regulation and management of associated Soviet Republics. The development of education and training in accordance with the demands of the economies and cultures of Soviet republics and an intention to reduce unnecessary bureaucracy were the main reasons for this decentralising act. [5; p. 35]. In the same year a decision, "On the State of Higher Education and on Measures for its Improvement" was made by the Central Committee of the Communist Party (CCCP) and the Council of Ministers of Azerbaijan, emphasizing the disadvantages of the existence of small HEIs with weak material bases and academic and human resources, as well as weak relations with industry. As a result, in the academic year 1965/66 only 11 HEIs were active in Azerbaijan with a student body of some 67,000 (compared with 1950/51, when only 28,600 students studied at 20 HEIs) [5; p. 37] and [1].

Between 1959 and 1969, the area occupied by HEI buildings more than doubled and that of their dormitories more than tripled. During the 1970s material development continued and the number of HEIs increased; there were 18, with 107,000 students, in 1980. [5; pp. 38-42]. At the same time the CCCP of Azerbaijan became more and more worried about "serious shortcomings" [5; p. 44] in the quality of education and research, with the management of the academic personnel of HEIs, with people's moral and political education and, openly or covertly - with corruption in admission processes and in exams during study.

International students came to Azerbaijan, starting from 1956. After learning Russian on preparatory courses they could enter an HEI in Azerbaijan or go to institutions in Russia and sometimes to other Soviet republics. Most international students were enrolled on undergraduate degree programs and only a very limited number of students studied to receive a



Candidate of Science (PhD) degree. In Soviet times professors and other teachers of Azerbaijani HEIs taught in various countries displaying an interest in the socialist way. But student exchange, it seems, was not encouraged.

After announcing the “Complete and Irrevocable Victory of Socialism in the USSR” (1959), the “Period of Developed Socialism” of the 1960s and 1970s came up with the main tasks of strengthening quality and balancing it with the quantity of education, making education a base for scientific and technical development, connecting higher education with industry, the further development of tertiary education, education of all types and levels with full government financing, “positive quality shifts” etc. Then, within “Developed Socialism” another period had emerged, that is the “Age of Stagnation”, a time of crisis for almost all institutions of socialism. It was a time when the country faced a deep crisis in the planned economy. This pervasive problem came to the surface in every field: in education, scientific research, industry and agriculture. Moral corruption and economic crisis were leading to the collapse of socialist society.

The post-Soviet Azerbaijani (*the Period of the Third Republic, 1991-*) education system has experienced various changes. The country’s economy collapsed and was plagued by powerlessness and corruption; the Azerbaijan-Armenia-Nagorno-Karabagh war has influenced negatively not only the expansion of the economy, but also the development of education and research. The uncertainty and irregularity of government education policy were among the decisive factors creating barriers to timely reforms of the education system. One thing was clear; it was impossible to change the entire education system quickly. Soviet-type educational forms would continue, by inertia, for some time.

On the other hand, socialism’s collapse and globalization have had some positive impact on education, on its modernization and internationalization. The rise of globalization and fall of socialism took place at the same time, and a free economy developed throughout the world [6]. It seems China is no exception, China is a different phenomenon; Chinese socialism has turned into a state-regulated market economy.

As pluralism and market economy models were entering the changing world, new models of education would also emerge. In the autumn of 1990, Khazar University, the first private higher education and research institution in Azerbaijan began to establish, through study and analysis, what was happening in the world of higher education, taking the American experience as a basis. Formally it was still the Soviet era; the official preparatory and founding decrees were issued by the Soviet of Ministers on December 20, 1990 and on March 18, 1991 respectively [7]. Khazar University had seriously discussed, tested, implemented and polished new substance, forms and methods concerning higher education and its organization. For the

first time in the country, a system of bachelor, master and doctorate degree systems and programs were worked out and a model credit-earning system set up, giving each student the opportunity to advance along an individual study trajectory. It passed from a teacher-centered system, which had ruled absolute in the country, to a student-centered system based particularly on interactive teaching methods. So, Khazar University opened and paved a new path for itself and for Azerbaijan [8].

### **Recent reform efforts in PSE – changes in the law, regulation, funding and operation of private/cross-border PSE institutions**

The path to reform is never smooth. It is a difficult path, involving wrong steps as well as successful strides. It is necessary to learn from mistakes and continue by making some changes to the general plan. Some bodies which are threatened by a loss of power as a result of reforms may put obstacles in the way, and they may attempt to arrest reform. An effective government and a struggle against corruption and monopoly in society, including education, are important conditions for the successful implementation of reform programs. Reform in the education field is considered to be the hardest and most difficult task in all countries. Fundamental changes in this field in post-socialist countries demand renovation in the way people think, in their philosophy of life, in people's and society's value systems. The outcomes of education, and its influence on society, are great, complicated and decisive. Education brings a person closer to freedom. Higher education engenders critical thinking. Reform in the system of education is closely related to the problem of changing its vehicles, i.e. educational institutions. This is incomparably harder than changing individuals; the changing of organizations demands more time. The main purpose of educational reform is to give individuals the opportunity to receive an education and to improve the quality of that education.

It is of the essence to prepare and adopt laws of education, research and development that can comprehensively accommodate the changing world with its trends of globalization, reflecting modern tendencies, pertinent problems and integration into the developed world system. The first Education Law of newly-independent Azerbaijan was adopted in 1992 [9]. Its many articles introduced new ideas and forms, taking western experience into consideration. The three-cycle degree system was introduced. But the idea of a doctorate was not realized except at Khazar University; in its place a Soviet-type Candidate of Science and Doctor of Science degree award system has remained.

This Education Law contains an article that decrees the right to establish private education institutions, although without indicating the procedure. Non-government educational institutes were defined as not-for-profit organizations. Financing students from under-resourced families admitted to fee-based educational institutes is an obligation of the state to an amount equal to the expenses of state educational institutions of the same or similar type (this article was not realized). Student admissions to a non-government educational institution are based on its own regulations (this article was valid until 2004, to be precise, student admissions were centralized by the government for all kinds of PSE from the academic year 2004-2005). Families of educators and teachers were exempted from energy and utilities expenses and were given certain reductions (for example, on public transport). All state and non-government educational institutes were exempted from all types of taxes (this was changed to the contrary position a few years after approval).

Some articles of the Education Law adopted in 1992 in Azerbaijan have been cancelled, and some others have become obsolete. For example, it stated that holders of a Candidate of Science degree would be examined in order to give them one of two titles - Doctor of Science (PhD) or magister – at the beginning of new doctorate programs (this slightly strange article was not put into effect).

The country's education policy was (and partly still is) based more on lobbyism and relationships than on established rules. Decision making in some cases may create questions like “where to go?” for the demanding person or institute.

The development of a normative legal foundation for education, with the participation of experts, stockholders, and other interested parties, is required. During 17 years between the first and the second Education Laws the discussion was held in pursuit of the right direction for the development of education's legal foundation. Both local and international experts' opinions were reflected in a number of publications, conferences were held both within and outside the country and in official meetings. This legal base ought to be free of bureaucratic elements, declarations and articles struggling to impede the genuine purposes of education, and should certainly consist of intelligible articles with unambiguous meaning. If legislation in the area of education isn't clear and doesn't meet general standards, then the uncertainty arising will complicate the building of strategic development and action plans of educational institutions [10], [11].

Efforts to write a new Law of Education appropriate to modern tendencies and to take it to Parliament yielded no results until 2009. The new (Second) Law of Education of 2009 [12] has not introduced many new ideas or new content. The structure, functioning and type of

educational institutions, including basic vocational schools, middle specialised schools (colleges, technical colleges), HEIs etc. remain the same as before.

A license is a requirement for an educational institution to become a legal entity, to start to act legally. The validity of a license differs for state, private and foreign-based institutions, namely, it is open-ended for state institutions, lasts for five years for private educational institutions and for three years if the founder is a foreign citizen or it is a non-Azerbaijani company. The aim, goal and mission of accreditation are uncertain and are mixed in with licensing. Successful graduates (with high grades?!) from tertiary non-university schools, in the event of entering HEIs, may ask for the transfer of credits previously earned, but within rules established by the “appropriate executive power”.

A PhD is not a final research degree, next is a Doctor of Science degree; thus the Azerbaijani advanced degree system has become an amalgam of the Soviet and Western systems [12].

The current situation and problems at all levels of education, and a plan of measures towards a step-by-step solution of problems, were reflected in the “Program of Educational Reforms” signed by the President of Azerbaijan in 1999 [13].

International partnership programs were one of the chief motors of change, innovation and modernization in education in Azerbaijan, first of all in higher education, then in general schools and vocational education. American, European, Japanese and other government agencies and foundations, Turkish, Russian and other government-funded programs have supported the energizing and consolidation of educational institutions in Azerbaijan.

After the collapse of socialism, the European Union started to carry out the TACIS-TEMPUS program in order to assist the higher education systems of Eastern Europe and former Soviet countries (1990). The program, which continues today, revived and essentially enlarged East-West cooperation in higher education. Azerbaijani public and private HEIs have participated in tens of projects within this program, trying to modernize their curricula and services. Concerning the support for Eastern (and Southern) countries, the European Commission funded Erasmus exchange program has now developed a similar mission; currently three Azerbaijani higher education institutions are members of the Consortium within the Erasmus Window program.

The substance of the all-European educational reform program, which is called the Bologna Process and started in 1998/9, is the “harmonization of the architecture of the European higher education system” looking for quality of higher education and comparability of forms (a three-cycle degree system, the length of degree programs, a credit transfer system,...) targeting a high quality European Higher Education Area. The importance of the

European Research Area to be carried out in coming years was emphasized clearly. The Lisbon strategy (2000), with its aim of turning the European Union into the most developed knowledge economy, is closely related to high quality higher education and excellence in research. On May 19, 2005, at a meeting in Bergen (Norway), Azerbaijan officially joined the Bologna Process.

The Study Abroad State Program was developed in Azerbaijan in order to provide scholarships for Azerbaijani citizens entering the undergraduate and graduate programs of foreign universities. Partnership agreements were signed with various organizations, such as DAAD, the US State Department and KNAUS France, who facilitate the search for appropriate HEIs for the study abroad program.

The diagram below – a comparison of the post-Soviet republics of Caucasus and Central Asia in outbound student mobility for 2007 - shows that, in spite of successes in the study abroad program, there is plenty of room here for improvement [14], [15].

### **Diagram 1**

#### **Students from a given country studying abroad (outbound mobile students) -2007**

N	Country	number of students	Population	Mobility per 1,000,000
1	Azerbaijan	4,743	8,120,247	584
2	Armenia	3,910	3,230,100	1,210
3	Georgia	8,233	4,615,807	1,783
4	Kazakhstan	30,051	15,399,437	1,951
5	Kyrgyzstan	3,969	5,431,747	730
6	Mongolia	6,427	3,041,142	2,113
7	Tajikistan	2,915	6,952,000	419
8	Turkmenistan	5,074	5,110,000	992
9	Uzbekistan	31,899	27,488,000	1,160

The long-awaited order to increase salaries for employees of the education sector was signed by the President of Azerbaijan at the beginning of the academic year 2008/2009.

The development of cross-border PSE institutions in Azerbaijan during the period of independence has had its ups and downs. They have been established and acted as branches of Russian HEIs and entrepreneurships for some Azerbaijanis; they were soon numbered in the dozens in the 1990s. In second place behind Russian branches were branches of Azerbaijani

universities. The student bodies of all these branches consisted of people who had failed to enter the public and private HEIs of Azerbaijan. The quality of education in almost all branch institutions was rather low according to the Ministry of Education. Due to unfavorable public opinion and the actions of related government agencies, almost all of them closed and were compelled to stop their activities. There are now only two branch institutions in the country; both with a Russian presence - one of them is the Baku branch of the Lomonosov Moscow State University, established recently, in 2007/8.

The number of government decrees and programs on the development of vocational education and secondary specialized schools and colleges, and the partnership agreements with international organizations issued, signed and/or started between 2003 and 2009, or proposed for coming years, emphasizes the necessity of changes and innovations, taking into consideration new market developments (for more detail on the content and consequences of these regulations, see Chapter 3)

Efforts to reform and regulate funding are discussed in detail below, (see Chapter 4 and, to a certain extent, Chapters 5 and 6).

With all its weaknesses and contradictions, the country has achieved successes and taken appreciable steps in the field of education during the not very long period of independence. The establishment of a private sector is one of the most visible outcomes of the new developments. Of course, there are the best, good, average and weak private educational institutions, but their rate of development and openness to innovation increases their competitive power. The few examples of educational institutions recording successes in the struggle against corruption and in the provision of modern teaching-training forms and methodology are usually cited from the private sector. The establishment and operation of a central student examination system was another important step forward as an anti-corruption measure, noting at the same time the defects of extreme centralization, which have tied the hands and arms of educational institutions, particularly private ones, and which cannot be seen so often in other places. The renewal of school buildings and reconstruction works and the development of physical plant are some signs of an enlivening of educational institutions. The publication of books in a Latin-based script, financed by the government, was another step forward vital for education (Azerbaijan has changed its alphabet three times during the last 70-80 years: during 1922-29 from Arabic into Latin, in 1939 from Latin into Cyrillic and during 1991-1998 from Cyrillic into Latin).

## **Objectives and methodology of the study**

The main objectives of the study are:

- to evaluate and analyze the growth and expansion of PSE;
- to discuss institutional arrangements for the provision of PSE;
- to understand the types of programs and courses offered in PSE institutions;
- to discuss the management structure of PSE;
- to analyze the mechanisms of financing PSE;
- to provide international comparisons of PSE development;
- to consider the employment/unemployment patterns of PSE graduates;
- to analyze policy options and reform approaches within the PSE sector.

The study is based on planned descriptive research and a comparative approach. The main question explored here is: what is happening in the PSE sector in Azerbaijan? This study provides a picture of the tendencies in development and peculiarities in the provision, management and financing of PSE in the country. The study examines and uses both quantitative and qualitative data over and above primary and secondary sources of data. Descriptive statistics are used to analyze issues related to access to post-secondary education, to success in study progress and in achieving goals, that is to say in earning diplomas and certificates. In addition to published data, interviews with senior officials and experts from related institutions were held, first of all, for data-checking purposes and for qualitative verification, and to achieve closer insight into the functioning of PSE in the country. No particular institutions, but a typical group of institutions, were examined in detail, allowing the formation of necessary generalizations. Policy implications are oriented towards the role that government may play. "Signposts" and diagrams throughout the text, and summarizing sentences in the study, are used to aid the understanding of comparisons and analyses. Various data on education concerning the post-Soviet period in Azerbaijan will not cover the Nagorno-Karabagh region of Azerbaijan occupied by Armenia.

### **Plan of the report**

The introductory **Chapter 1** of the Study is devoted to general information and statements on the development of post-secondary education in Azerbaijan. The ideas and content of recent efforts to reform PSE are demonstrated through changes in laws and

regulations, new funding opportunities, the operation of diverse PSE institutions, international cooperation etc. The chapter ends with a brief description of the objectives and methodology of the study.

**Chapter 2** aims to provide a context for various features of the diversification of PSE, including the reasons for diversification, types of institutions and providers, types and levels of courses offered by different PSE institutions.

**Chapter 3** turns to a broad description and discussion of the evolution of non-university tertiary education in the country. The growth in institutions and enrolment for all PSE over recent years are also within the focus of this section.

Policy and regulations pertaining to the financing of public, private and other types of PSE, items of expenditure, sources of funding, budget allocations to various institutions and cost recovery issues are discussed in **Chapter 4**, as far as possible. It should be noted that in some cases it was not easy, sometimes not possible, to ascertain full financial information. At that time discussions with different levels of management, related to the problems indicated, has helped to estimate the situation. provided only the essential elements of financial facts and notices.

**Chapter 5** examines which agencies are responsible for managing non-university PSE institutions and for higher education. The quality of education offered by various providers and quality assurance mechanisms at institutional and national education system level are summarized and analyzed in detail here.

The final section - **Chapter 6** - consists of a discussion on the employment and unemployment of PSE graduates and conclusions, ideas on future developments in the PSE, and recommendations.

References contain various types of reviews, reports, theoretical articles, books and monographs, case studies etc. They were used according to their relative importance for the study.

Some data on the country statement and educational development have been assembled in the **Annex**; we think they are of interest in understanding different sides of the realms associated with education, influencing and influenced by education.



## **Chapter 2: Diversification of post-secondary education**

### **Reasons for the diversification of PSE**

The diversification of PSE can be explained in terms of the variety and assortment of programs and courses, the involvement of a number of ministries, the public-private presence in the provision of PSE, sources of financing, clientele etc.

The emergence of information-based production, a broad service sector and other sections of society required skills which necessitated a post-secondary level of education, but not necessarily a university degree. The universities, in many cases and in many countries, could not provide courses to train people in the diversity of skills required and in large enough numbers, they were seen as too academic and not sufficiently appropriate for occupational preparation. However, there are exceptions, for instance in Turkey most of the universities have developed vocational and community college-type educational institutions affiliated to the university itself. In Azerbaijan there are only four non-university tertiary educational institutions affiliated directly to HEIs: two state and two private institutions. A substantial share of PSE is now provided outside universities and in institutions which may not lead to a first undergraduate degree.

The non-university segment of PSE is seen as an alternative to universities in providing less expensive education, expanding access and enrolment. This is particularly important in Azerbaijan, where access to higher education is extremely low (the gross enrolment ratio in 2009 is around 15%) [14], [8]. This non-university subdivision of the education sector helps unemployed people to find jobs within their vocational occupation and it helps to reduce poverty levels, albeit modestly. There are 108 PS non-tertiary vocational schools in the country, with 25,315 students for the academic year 2008/2009 [13], [15]; these numbers are relatively low.

Tertiary education, including university and non-university sectors, expanded quickly in many countries. Mass education is the main social driving force in most developed and many developing countries; and this does not mean secondary school, it means PSE, and even higher education. Non-compulsory but well-prepared total PSE is a feature of modern countries. This is not yet the case in Azerbaijan.

PSE isn't only for youth; the continuous development of the individual, and of society as a whole, is based on lifelong learning. In countries where average life expectancy is increasing, the number of adults above retirement age is also rising. With growth in the adult population,

the number of people wanting to change their profession or job and who want to learn something new, increases year by year. This strengthens the concept of lifelong learning and demands access to PSE at any age. It is therefore necessary that a reform program for the PSE system must include a solution to the fundamental problem of achieving access to diverse PSE education for all age groups.

In any country, one of the main indicators of the power and influence of the PSE system is its diversity: the diversity of purpose and targets; the variety of methods of development and the flexibility and autonomy of each PSE institution. An education system restricted by archaic rules and procedures, restricted by a policy of respect only (or mainly) for traditional forms, closed to innovation or suffering from an agoraphobic resistance to the independence of institutions can lead only to a blocked system.

“The power of the American higher education system is that it is not a system” [16]. Diversity depends heavily on state education policy and is partly connected with the independence of educational institution from government in their actions and choices.

It is impossible to predict the changing demands of the labor market and people sometimes change their workplaces or careers due to obligations or personal interests. That is why informal education and training (non-degree programs) are also rising in popularity for the role that they play in the modern knowledge economy.

### **Types of PSE institutions: PSE non-tertiary institutions; PSE non-university tertiary institutions; and universities**

The classification known as ISCED – 1997, covers two types of variables: levels and fields of education. Here we`ll discuss types of PSE institutions by level, from lower to upper. ISCED0, ISCED1, ISCED2 and ISCED3 denote pre-primary, primary, lower-secondary and upper-secondary levels of education respectively.

ISCED4 designates **post-secondary non-tertiary** education with pre-vocational or pre-technical, vocational or technical education as well as some general education for short or long terms. ISCED4 also includes preparatory courses for admission to degree programs, pre-degree foundation courses and non-degree adult education, such as technical courses on specific subjects (like computer software). Programs for two years of upper secondary education (ISCED3) and then two or more additional years of education would also be related to ISCED4 level.

ISCED4A indicates those programs that prepare for entry to the first stage of tertiary education, denoted by ISCED5. Vocational lyceums (“*peşə litseyləri*” in Azeri) belong to this category. ISCED4B signifies the type of programs that are designed primarily for direct labor market entry and do not give access to tertiary education. Vocational basic schools or vocational-technical schools (“*peşə məktəbləri*” or “*texniki peşə məktəbləri*” in Azeri) fit into ISCED4B.

Thus successful completion of both ISCED3 and ISCED4A is an entry requirement for the first stage of tertiary education, not leading directly to advanced (second cycle) degree qualification. The upper stage of the next level, that is ISCED5A, usually takes three or four or more years (in Europe, with its Bologna Process, this cycle consists of first degree programs (B.Sc., B.A., B.B.A,...) of three years’ duration in most cases and four years otherwise. In Azerbaijan this is the first cycle of **higher education**, namely bachelor degree programs of four years (there is no university degree program for three years in the country, \*as in the U.S.A.) or other first degree programs which require more than four years.

ISCED5B means a **non-university tertiary** level of education, which lasts for two or three years after the upper secondary ISCED3 or ISCED4A levels and which offers a more practical and/or occupational oriented education. This ISCED5B degree does not provide direct access to the next level - the second cycle of higher education, that is, the **advanced research-type of degree program** denoted by ISCED6. There may be some adult education programs which can be included in the ISCED5 level.

In Azerbaijan, the general name for non-university tertiary education is *orta ixtisas təhsili* (middle or secondary specialised education); some of these types of institutions are now called technicums, a name which originated in Soviet times, and others, which make up the majority, are called colleges. Concerning content and models of education, there are no differences between these technicums and colleges.

Institutions of higher education and research (ISCED5A and ISCED6) in Azerbaijan are diverse in the levels of degree programs and research orientation, in content, form, and also in names. These include universities, institutes (of higher education), schools, conservatoires, academies and research institutes. In general, institutes of higher learning are supposed to be more specialized, but many other specialized institutions are known by other names, for example, academies. The term “School” (*Məktəb* in Azeri) in HEI is used in a few cases for military schools in Baku. The Academy of Sciences of Azerbaijan, in reality, is a multi-discipline research oriented university, with advanced degree programs and with research institutes as its academic divisions. Other research institutes not affiliated to the Academy of

Sciences can be classified as specialized higher learning institutions; they also, like the Academy of Sciences, by definition and substance belong to the ISCED6 level.

### **PSE providers – public institutions, private institutions, cross-border providers, religious agencies**

Various state and non-profit private institutions, two cross-border state education agencies and one religious agency are providers of PSE in Azerbaijan.

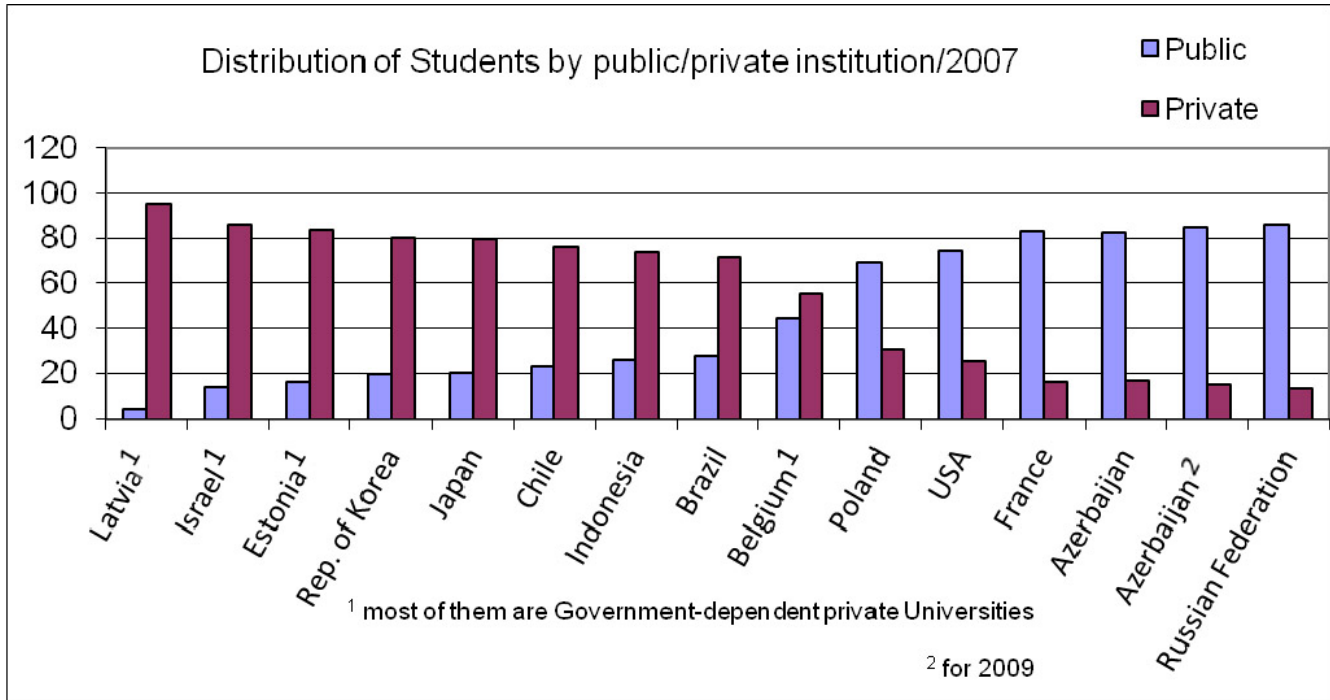
Among the total of 54 HEIs active in 2009 in Azerbaijan, 25 are state institutions affiliated to the Ministry of Education. Another group of 11 state higher learning institutions affiliated to other ministries and corporations also provide state-funded education. Some of them are old, but the majority is newly-established institutions. Six of these HEIs offer programs in military and other forces-related fields.

There are two cross-border providers (the branch of the Lomonosov Moscow State University and that of the Moscow State Open University) recently established in Baku, Azerbaijan. The Derbend Branch of the Azerbaijan State Economic University active in the city of Derbend in Daghestan, Russia is the only Azerbaijani state HEI active abroad and run from Baku.

Three HEIs were established by non-government organizations; to be exact, the Baku Islamic University, affiliated to a religious agency, the Caucasian Board of Muslims; two other affiliations are to *Azerittifaq* – the Azerbaijan Central Cooperation Union and the Confederation of Trade Unions (Some authors consider the latter, above-mentioned education center, to be a private higher education institution). There were 13 private universities, established by groups of Azerbaijani citizens during 1990-1997, only one of them is located outside Greater Baku, in Nakhchivan city. One of the private HEIs, specifically Qafqaz University, was established by a Turkey-based foundation.

Private tertiary education sector plays an essential role in student enrolments worldwide. This is probably the chief method of solving one of education's most vital problems, namely increasing access to tertiary education in most parts of the globe. It may be that the importance of the role of private education sector is not emphasized sufficiently in Azerbaijan. The diagram below demonstrates the distribution of students by public and private higher education institutions of undergraduate and graduate programs in selected countries of the post-Soviet area (including Azerbaijan), America, Europe and Asia, for 2007 [14].

**Diagram 2**



All Soviet-era, Azerbaijani, non-tertiary vocational and non-university tertiary education institutions were public, affiliated to various state agencies and different enterprises. Of the 61 non-university tertiary education institutions active in 2009 in Azerbaijan, all but three are state institutions.

Historically, vocational education and occupational training was provided in parallel in many non-tertiary vocational schools in Azerbaijan; study and work were included in a single program. Some experts call this system “dual” and refer mainly to the Germany experience [17; pp. 485-513].

During the Soviet 1980s and the greater part of the period of independence, crises in the economy, industry and manufacturing have had significant negative effects on the survival of vocational-technical schools and the so-called technicums, non-university tertiary schools. Weak control of human resources and teacher training, weak relations with industry and the productive sectors, weakness of government support, particularly in financing, led to a catastrophic reduction in quality in the non-university education area; the sector was losing its attraction day-by-day.

## **Types of courses offered by PSE institutions – programs of study areas**

Classic state universities in all post-Soviet and, in many cases, in post-socialist countries, are similar to the liberal arts colleges of the US, these universities additionally may have faculty (school, or department) of law, faculties of teacher training (within “general” faculties in the same fields, or sometimes independently) and a few other insignificant exceptions, i.e. programs. Baku State University, the oldest European-type Azerbaijani university has also followed this scheme. Naxchivan State University, with faculties of Medicine and a Conservatoire is a real exception here. These classic universities are located in the main cities and regional centers – Baku, Sumgayit, Gence, Lenkeran, Naxchivan. After the classic state universities are teacher training (or pedagogic) universities with similar fields of study, preparing, first of all, teachers for pre-primary, primary and secondary schools. A good many HEIs are in the areas of engineering and technology. Some of them are general engineering-technical universities with many diverse undergraduate and graduate engineering programs, others are more or less specialized, like the Azerbaijan State Oil Academy (many diverse programs), the Azerbaijani Architecture and Construction University (more specialized). There are universities, institutes, academies specialized in music and fine arts, languages, economics, management and business, political science and public administration, medicine, agriculture, tourism, physical culture and sport. Many HEIs (around 25% of state universities) are also in diverse sectors of the military, transportation and security and are affiliated to the appropriate ministries and other state agencies.

Private universities are relatively new establishments. All 13 private universities, apart from the one in Naxchivan, are located in Baku, the capital city of the country. They have diverse majors in the liberal arts (many more in the humanities and social sciences than in the sciences), languages, teacher training, economics, business and management, and a few in engineering. Education in such areas as medicine, law and international relations in private universities is limited by the government (there haven’t been any new student admissions to these majors during the last three years).

Specialized research institutes of the Academy of Sciences, of ministries and of corporations have programs leading to Candidate of Science degrees (PhD, according to the new Education Law of 2009) and in some cases, Doctor of Science degrees. In 36 institutes and development centers of the Azerbaijan National Academy of Sciences (ANAS) the areas of study are quite broad – most of the sciences, humanities, arts and social sciences are represented there. Other research institutes connected to ministries and corporations are narrowly specialized and professionally oriented, for instance, in such fields as petroleum,

ecology, water resources etc. There 137 research and development institutions, including institutes of the ANAS and many HEIs (this number is changing due to new foundations and mergers).

More than 80% of the HEIs are located in Baku, the capital city of the country. Adding to this list all the research institutes of the Academy of Sciences and institutes affiliated to different ministries, corporations and other agencies gives an even more imposing picture of the capital's absorption of HEIs (or tertiary education and research institutions absorption of the capital?!).

Non-university tertiary education institutions (colleges, so-called technicums and specialized schools in nursing, medicine and other areas) have a much wider geographical spectrum than HEIs. As for non-university tertiary schools, around 1/3 of them are located in Baku, others are distributed more or less uniformly through the provinces and regions, unlike higher education institutions.

Non-university colleges, schools and technicums are specialized in fields such as nursing-medical (8), teacher training (around 5), technical-industrial fields and technology, music, culture and fine arts, management, business, socio-economics, service and security areas. Looking at the numbers of these institutions in respect of majors offered, three of them are predominant and close to each other: culture, music and fine arts; industrial/technological; and economics, business and management. Next, by number of institutions, is medicine-nursing, followed by teacher training colleges. Some colleges may not concentrate totally on just one area and have, for instance, two specialisms.

The Ministry of Education has recently prepared a "Structure of a basic education program for vocational education" in order to make the necessary changes in related curricula [13].

### **Level of courses offered by PSE – short and long duration, degree level and diploma level**

All research institutes of the Academy of Sciences offer only advanced research degree programs, i.e. leading to the Candidate of Science (PhD) degree and programs at higher level leading to the Doctor of Science degree. They do not have any magister (or master), or lower level, degree programs. So all of these institutes, alongside other research institutes with different affiliations, belong to research oriented universities with only PhD and higher degree programs. The formal duration of PhD programs is three years, while Doctor of Science degree

programs don't have any time framework or exact curriculum; the same applies to other universities (Khazar University has introduced its own rules, procedures and curriculum requirements for PhD programs).

Students finishing the four year undergraduate program receive the bachelor of science (B.Sc.) degree for all majors in sciences, arts, humanities and social sciences, technology and engineering (no Bachelor of Art - B.A. degree - exists in the Azerbaijani education system, all types of undergraduate and graduate degree are known as "science" degrees). The second cycle – the so-called Magister (Master) of Science and the third – the doctorate - are considered lower and upper graduate degrees respectively. We must note that the idea of a doctorate has not been realized except one institution (see: Recent reform efforts in PSE, Chapter 1). Exceptions to the bachelor-magister degree system have been made only for medicine and other health-related majors including veterinary; medicine is a six year program and programs in dentistry, pediatrics, pharmacology and medical biology are planned for five years. Students finishing these programs receive diplomas as medical doctors, physician-dentists, physician-pediatricians, physician-pharmacologists and physician-biologists.

HEIs provide education, first of all, at undergraduate level, to be precise a baccalaureate over four years of study, and some a so-called diploma level, that is, five and six-year programs (in medicine and health related fields, including veterinary). All state universities affiliated to the Ministry of Education but one (information for 2009) have developed graduate programs leading to the second – Magister (Master) – degree, generally over two years (less in exceptional cases). Many have Candidate of Science degrees and some also offer Doctor of Science degree programs. Most programs of private universities are at undergraduate level. A number of them provide education at magister level and a very few at PhD (Candidate of Science) level.

The length of study for non-university tertiary education (technicums, colleges) depends on the backgrounds of freshmen; it is two or three years for upper-secondary school graduates (one additional year is required for tuition by correspondence), and it is three or four years for lower-secondary school graduates. The actual length of study depends on the institution and the major. Graduates of non-university tertiary educational institutions receive sub-bachelor degrees. These graduates, if they wish, enter the related major within higher education institutions via general competition (strict rules for this are defined by the State Student Admission Committee) if grades of at least 75% of the subjects on the curriculum and the grade from the so-called state final examination are "excellent" (more than 90 points from the maximum 100), and all other grades are "good" (more than 70 points from the maximum 100). All other graduates also have the right to apply for further education at an HEI [18], [19].



Non-tertiary vocational schools concentrate mainly on practical crafts, agriculture, service and, of course, technique and technology. In the *Peşə məktəbi* (basic vocational school), the curriculum is based on crafts education in a chosen area, while in the *Peşə litseyi* (vocational school with general curriculum) both crafts training and the general secondary school curriculum are included in the program. Educational programs in non-tertiary schools are for one or two years, as well as short training courses for six months etc.

## Chapter 3: Expansion of PSE

### Evolution of non-university tertiary education in the country

The vocational school system of the Middle Ages has maintained continuity and never disappeared, but we haven't enough reliable information about its development through all periods.

The Experimental School of Silk Culture, established in 1843 in Shaki city, was probably the first significant vocational school in Russian Azerbaijan. During the 19th Century in Nakhchivan, Elizavetpol (Ganja) and in Baku there were well-run crafts schools in carpentry, fitting, gardening, agriculture, needlework for women, metal processing, navigation, and in Baku there was a secondary mechanical-constuction school with a subordinate crafts school for metal and wood processing and stone-cutting. In 1914 there were 10 vocational schools in Azerbaijan, with 2402 students. [4; pp. 181-183].

The 1888 law on the “Main Principles of Industrial Schools” introduced three types of *industrial schools* (in descending order): the secondary (middle) technical school, the low technical school and the craft (vocational) school. [4]

Only a limited number of gymnasiums – secondary schools whose graduates had the right to enter higher education institutions were established in Azerbaijan from the 1860s until the early 1900s. *Classic gimnazium* graduates could enter classic universities (in all fields of the liberal arts and law) and graduates of the so-called *realniy gimnaziums* could enter engineering HEIs. There were only six such schools in Azerbaijan: two *realniy* (Baku and Shusha), two *classic gimnaziums* (Baku and Ganja), a *pro-gimnazium* and a trade school in Baku [20; pp. 226-234].

There were different types of girls' schools, whose curricula were based on both religious and secular subjects. There were also three Russian secondary schools for girls: the Mariinskiy School in Shusha and gymnasiums in Baku and Ganja based on the previous “Saint Nina” girls' schools. The Muslim Girls' School in Baku, opened in 1901 with full financial support from the patron H.Z.Taghiyev, played an important role in the education of Azeri women [20; pp. 241-262].

Railroad schools were opened in Ganja in 1888 and then in several other railroad stations in Azerbaijan for railway men and their children, both boys and girls, sometimes with evening courses for adults only. The curriculum was based firstly on general education and then on crafts.

The first of the so-called Sunday day schools was opened in 1886 at the Nobel Brothers Oil Company for its masters and workers and then, from 1897, evening literacy courses for adults were also in operation. It is interesting to note the national (ethnic) composition of these first courses – 20 Azeris, 22 Russians and 20 Armenians. These types of schools and courses were soon widespread.

The Transcaucasia Teachers' Seminary (1876-1917) in Gori (the city in the present day Republic of Georgia) opened as a 4-year specialized secondary school (non-university tertiary education institution) with Russian, Georgian and Armenian divisions; it took around three years, from 1879-1882 for an Azerbaijani ("Tatar" in documents of that time) division to be established. Despite the main aim being to prepare elementary school teachers, this Seminary played an exceptional role in the development of Azerbaijani education and culture; among its graduates one can identify famous Azerbaijani educators, composers, writers, journalists and politicians. In 1918, the Azerbaijani division of the Seminary moved to Kazakh, the regional center of western Azerbaijan and continued its work as the Kazakh Teachers Seminary.

A Principal Committee for Vocational Education was created in 1920 in Baku with the following duties: opening courses of vocational training, preparing programs, particularly for Muslim students and for Muslim women, and controlling management and quality. From 1921 to 1939 a new type of Soviet vocational school, the so-called FZU (from the Russian "Fabrichno-zavodskogo uchenichestva", that is Factory Apprenticeship) was created. They were managed and financed by the industries and organizations they were affiliated to. The study program at FZU schools was for three years and included both general education and professional training. The language of instruction was Azeri, students also learned Russian. The absence of centralized management led to weaknesses (16 such schools existed in 1940). In 1940 a new vocational school system, with three divisions, was introduced: craft schools, railway schools and FZO (from the Russian "Fabrichno-zavodskogo obucheniya", that is Factory Education); the study period for the first two was two years and for the last one - six months; now, taking into account the organizational shortcomings of the previous FZU schools, all were financed by the government including full board for students. These schools were in intensive operation throughout the War of 1941-1945. They prepared around 150,000 qualified workers; this system of vocational schools had a hugely positive outcome and impact on industry during the years 1940-1960.[4]

The growth in numbers of non-university PSE institutions was quite impressive during the Soviet period (see [3], [4], [1], and Diagram 4 below).

A Government Committee for Technical-Vocational Education, with wide authority, was established in 1959. In the second half of the 1960s, both the number of vocational schools

and their students essentially increased. Some of these schools were transformed into secondary vocational schools with three years of study; their graduates, in addition to the diploma of vocational qualification, also received the general secondary school diploma. The 1970s were the peak of vocational education in the quantitative sense; a number of special meetings and sections of the Central Committee of the Communist Party (CCCP) as well as of the government of Azerbaijan were devoted to diversification, activation, and the quality of training at vocational schools; related decisions were made. [4] At the same time the real quality of education and relations between schools and industrial, agricultural and other organizations to which these schools had been affiliated and with which they collaborated, declined further and further, the discontinuity and sustainability of these schools were questioned more and more.

One difference, while comparing modern times with the Socialist-Soviet era (with compulsory upper secondary education), must be noted: now, a section (albeit small) of the general school student population leaves school after the lower secondary phase, either losing interest in school education or taking jobs to support their families, or going to vocational-technical schools (there are no reliable statistics on this movement). There are 108 vocational (non-tertiary) schools, with 25,315 students and 3650 teachers-masters in 2009 (so the teacher-student ratio is 1:6.9). In the case of non-university tertiary education institutions, there are 61 (3 of them private) institutions with around 60,500 students and 7,000 teachers (so the teacher-student ratio here is 1 : 8.5) [13], [15].

According to the first Education Law (1992) of the period of independence (Third Republic period) students finishing compulsory (lower-secondary) education could enter basic vocational schools (“*peşə məktəbləri*” or “*texniki peşə məktəbləri*”), which were purely vocational and did not provide upper-secondary education. Vocational lyceums (*peşə litseyləri*), according to this Law, were higher in the hierarchy of vocational institutes than the above-mentioned schools; they engaged in more complex areas of vocational education and their graduates received not only “craftsman” (*sənətkar*) diplomas but also general high school diplomas. Non-university tertiary education was based mainly on technicums and colleges (or in general terminology “middle specialized schools” (*orta ixtisas məktəbləri*) with the mission of educating, training and re-training “middle level” specialists. Graduates of these institutes received “junior specialist” (*kiçik mütəxəssis*) diplomas.

The President of Azerbaijan’s decree “On the Improving of the Education System of Azerbaijan” (2000) has directed the attention of society and government predominantly towards structural changes to the tertiary education system. The Ministry of Education prepared a “Structure for the Basic Education Program of Vocational Education” in order to make the

necessary changes to the curriculum. Most tertiary vocational schools' became "colleges". The re-establishment of two well-known colleges was included in the above-mentioned Presidential Decree of 2000, namely the College of Fine Arts at the Azerbaijan State Academy of Arts and the College of Music at the National Conservatoire. Another new college, the College of Construction, was established in 2004 at the Architecture and Construction University.

In order to create the legal, economic, organizational and teaching conditions, "The Program of Development of Vocational Tertiary Education in the Republic of Azerbaijan for 2001-2004" was approved. Its further development was supported by the decree "On Improving the Network of Tertiary Vocational Institutions" from the Council of Ministers. As a result, some new curricula were introduced in some schools, a certain number of vocational schools were closed and others were merged, thus creating new colleges. Recently, a new "Development Program for Vocational Tertiary Education for 2010-2014" was prepared by the Ministry of Education; it is awaiting approval by the Council of Ministers. [13]

One of the factors exacerbating the problems of postsecondary education is the demise of basic vocational schools. This system suffers from grave shortcomings in teachers' qualifications, in resources and in a lack of real industrial involvement in the educational process. The instructor/student ratio here is very high (around 1:6) and the curricula are completely useless.

Technicums and colleges, those non-university tertiary education institutions, have declined in popularity. Attractive systems have not been set up for non-university tertiary schools similar to the system of community colleges in the United States. Students of Azerbaijani technicums and colleges do not qualify for direct negotiation with HEIs for entrance as students, at least as a group of successful students into this or that HEI; this reduces motivation and opportunities for the development and improvement of these sub-baccalaureate colleges, as well as for their students. In the USA in 2004, approximately 38% of freshman students studied at community colleges. It would be beneficial if private and some state HEIs in Azerbaijan were encouraged to form this kind of two-year college with a further transfer of credits (or part credits) from those colleges to appropriate departments of allied HEIs. The determination of a new state policy becomes a crucial issue here [11].

The decree on the "Employment strategy of the Azerbaijan Republic (2006-2015)" signed by the President of Azerbaijan focused particularly on the improvement of vocational schools in order to be able to prepare competitive specialists for the labor market. Another decree, the "State Program for the Development of Vocational Education in the Republic of Azerbaijan for 2007-2012" signed by the President emphasized the priority of problems within this area and the importance of partnerships with international organizations, particularly the

World Bank. The strengthening of physical plant, the forming of new economic relations, the development of vocational education in relation to regional development, the strengthening of rules and regulations etc. are among the measures to be taken.

Partnership in the area of vocational education has already begun with the World Bank, the Japan International Cooperation Bank, UNESCO, the European Education Fund, the World Trade Organization, the DEU International Corporation and Hilfswerk Austria.

A new program on “The Strategy of Reform in Vocational Education and Test-application in Selected Regions of Azerbaijan” was started recently with the financial support of the European Commission; technical support is given by the British Council. Experts from the Ministry of Tourism and Culture, the Ministry of Labor and Social Security, the Ministry of Economic Development and the Consortium of Entrepreneurs have also been invited onto the project.

An agreement on the “Improvement of vocational education in Azerbaijan”, signed between UNESCO on the one hand and the Azerbaijani Government and the Heydar Aliyev Foundation on the other, in 2007, envisages the development of new curricula and textbooks for use in the training of cadres in hotel management and in information-communication technology. The establishment of a Resource Center for further training is also included in this project. The Japanese Government’s grant is to put this project into practice. A “Center for the Development of Vocational Education” has been established; it is affiliated to the Institute of Educational Problems (within the Ministry of Education) for the institutional development of vocational education.

It is intended to carry out a major project to establish a “Vocational Education Center for Advanced Technologies” in Baku, in partnership with the DEU International Corporation of the Republic of Korea; preparation and training will be held in the fields of electricity and electronics, automation, car repair, information technology and machinery.

A project “Preparation of a curriculum for basic vocational education” has started with the support of the World Bank and within the framework of the Second Project for the Development of the Education Sector.

The German Technical Assistance Organization, GTZ GmbH, has been running a regional project for the training of teachers and masters of vocational educational institutions in many countries, including Azerbaijan, since 2003 [13].

Anyway, in general, vocational-technical schools have been in deep crisis. Their numbers are declining and those that survive aren’t able to adapt their study and training to changing demands. Although the transition from a planned economy to a market economy demands sharp changes within this sector, they have not yet occurred. These schools can seize

the opportunity to revive themselves and regain their efficiency as part of a three-sided partnership: private providers, government and labor market. As a positive example, we can point to two vocational-technical schools founded by ADRA (Adventist Development and Relief Agency) in two regions of Azerbaijan (Ganja and Aghcabadi) focused on the IDP and refugee populations. By adapting to market demands, establishing appropriate physical plant and functional equipment, selecting good teachers and masters, and installing effective administration, they were able to achieve good results in a relatively short period [8].

Non-tertiary education and partly non-university tertiary education system could also help combat unemployment and poverty.

### **Transition from higher secondary to PSE – the share of secondary school graduates entering different types of PSE**

This section is based on data from SSAC publications [21].

In 2009, the number of upper-secondary school graduates was 108,271 and the number of applicants for HEIs - 112,875, fewer than in previous year. 60.9% of these applicants were immediate (last year) graduates of upper-secondary schools, 16.93% - previous year (2008) graduates, the rest – graduates of 2007 and before.

According to the Student Admission Plan (29,030 places) 86.15% of the total were planned for tuition-free and tuition-based admissions to state HEIs, and 13.45% - for private HEIs. In reality only 27,476 students were admitted, that is, 94.65%.

In the case of the magister, the admission plan was for 5,168 (only 3830 were admitted, that is 74.11%). The number of applicants was 17,179, and 9,992 (65.83%) of them were same year holders of bachelor degrees.

The admission announcement for non-university tertiary schools was made after the publication of results of admission exams to HEIs. These placements were provided in parallel with second placement evaluations for HEIs. The entry requirements for upper-secondary school graduates going to these tertiary schools were lower than for HEIs (see below: Categories of students attracted to different PSE institutions...). The admission plan was for 6,614 and the majority of them, that is 5,999 places, were planned for state institutions (6,406 students were admitted). The total number of applicants was 27,080, 12.61% fewer than in 2008.

The distribution of admission by groups of study areas (according to CSAC examination grouping rules) is given below:

- 62.28% - technical, economics, agriculture, law, teacher training, sports;
- 28.92% - chemical-technology and nursing-medical, veterinary-medical;
- 8.80% - humanities, music and fine arts.

The admission plan for lower-secondary school graduates to non-university tertiary education for 2009 was for 9,516 places, only 100 of them for a private school. The number of applicants was 26,389, that is, 13.42% more than in 2008. (8,976 students, that is, 94.36% of planned places were filled). Admission scores were essentially lower than in the case of upper-secondary school graduates.

The diagram below shows the numbers of applicants and admitted students with percentages of success compiled for the 8 year period beginning from the academic year 2002/3 until last year, 2008/9. [21]. It also explains to some degree the interest of upper secondary and lower secondary schools graduates in non-university tertiary education during these years (partly managed by state admission plan-policy).

**Diagram 3**

**Dynamics of admission to higher education and non-university tertiary education**

Years	For higher education		For non-university tertiary education			
	number of applicants	percentage admitted	number of applicants		percentage admitted	
			from upper-secondary	from lower-secondary	from upper-secondary	from lower-secondary
2002/03	51.069	36	11.62	-	52	-
2003/04	70.007	34	12.337	-	57	-
2004/05	90.451	26	15.356	-	51	-
2005/06	99.00	28	25.172	9.679	38	67
2006/07	104.264	22	26.511	10.336	32	69
2007/08	103.367	24	27.654	14.614	22	54
2008/09	116.52	23	34.664	23.266	17	39
2009/10	112.875	24	31.703	26.389	20	34

The total number of all applicants to PSE in 2009 was 183,523; 61.50% applied for first degree programs in HEIs and 9.36% for magister; thus 70.86% in total - for undergraduate and graduate programs of HEIs. The remaining 29.14% of candidates applied for non-university tertiary schools (with almost equal distribution between upper-secondary and lower secondary school graduates, to be exact, 14.76% and 14.38 % respectively).

Of all admitted students, 58.84% entered first degree programs in HEIs, 8.20% to magister programs (so 65.04% to HEIs), and 32.96% to non-university tertiary schools.



The total success rate of applicants for 2009 was as follows: 8.39% of all applicants entered non-university tertiary schools, and 17.90% entered HEIs.

It would be interesting to know the composition of higher education majors by students who have entered related study areas. The following is based on SSAC classification of admission examination groupings:

- math, physics, engineering comprise 30.03% of those admitted.
- economics and management, sociology and geography comprise 25.25%;
- humanities, including related teacher training, political sciences and international relations, and fine arts comprise 32.81%;
- medicine, chemistry, biology, psychology and sports comprise 11.9% of those admitted [21].

### **Growth in institutions and enrolment by type of institution (2003-2008)**

The number of tertiary education institutions began to increase after World War II. Serious discussions about the quality of programs and the capacities of educational institutions were held in 1959 (see above, Chapter 1). Small HEIs with few material and human resources were not able to function as real educational and research centers. As a result of the necessary merges, in the academic year 1965/66 there were only 11 (soon, 12) HEIs operating in Azerbaijan with a student body of 67,000 (compare with 1950/51, when around 28.6 thousand students studied at 20 HEIs, or the 100.1 thousand students at 13 HEIs in 1971/72) [5; p. 37], [3], [1], [4]. In 1980/81 there were already 17 HEIs, with a total student body of 107 thousand.

Currently, there are 54 different HEIs, with 130,430 undergraduates (45,68% of them women) and 3,265 master students (2009). The increase in the number of HEIs is connected with the opening of more and more small, specialised state institutions affiliated to ministries and other state agencies. The expression “mushrooms after rain”, once (in the 1990s) applied to private universities, now certainly applies to the situation occurring in the state sector. This is probably one of the factors leading to the limitation in number of private HEIs and their state-planned student enrolments. In 1998 there were about 40 HEIs in Azerbaijan (the number has changed rapidly since then) with some 25 state and 15 private providers. Now, in 2009, there is a total of 54 HEIs, 13 (or 14 depending on classification) are private and 41 (40) are state higher education institutions.

The history of non-university tertiary schools is similar to that of HEIs, for instance, in 1950/51 there were 81 institutions with only 20.3 thousand students; but by 1965/66 the number of institutions had decreased to 66, and the number of students increased to 55.8

thousand. In 1980/81 there were 75 institutions with a student body of 79 thousand. Now (2009), the number of students studying in 60 of these institutions is only 52,579 (69% of them women).

In 1980, the number of non-tertiary institutions, as well as the number of their students, exceeded those of the two other post-secondary institutions, 159 and 93.6 thousand respectively (some data for non-tertiary education is not so accurate, or is disputed in different sources; the last two numbers, for instance, being replaced by 13 and 99.8 thousand in another source- see public) . These numbers are currently 108 and 25,184 respectively. It is interesting to look through the proposed plan of development for vocational-technical schools in Azerbaijan compiled in 1979 for the period 1981-1990. According to that plan the number of vocational schools would be increased to reach 276 (120 of them lyceum-type, also awarding secondary school diplomas) with more than 150,000 students. (4; pp.199-201). Now (2009), there are 108 non-tertiary institutions in Azerbaijan, with only 25,184 students (30% of them women).

**Diagram 4**

Growth of higher education institutions in Azerbaijan			Growth of non-university tertiary education		Growth of non-tertiary vocational schools	
years	N <sup>o</sup> institutions	N <sup>o</sup> students	N <sup>o</sup> institutions	N <sup>o</sup> students	N <sup>o</sup> institutions	N <sup>o</sup> students
1920/21	2	2.6	3 (1914/15)	0.5	-	-
1929/30	5	5,485 / 5,518	40	10.06 ths	-	-
1930/31	12	7.146	57	16,102	-	-
1931/32	20	10,435 / 9,483	72	18,605	-	-
1932/33	15	9,887	85	14,841	-	-
1934/35	12	10,712	67	15,607	-	-
1938/39	14	11,888	93	27,076	-	-
1940/41	16	14.6 ths	91	17.4 ths	-	-
1950/51	20	28.6 ths	81	20.3 ths	-	-
1960/61	12	36.00 ths	66	27.00 ths	35	7.5
1970/71	13	100.1 ths	79	70.8 ths	84	43.8
1974/75	16	97.7 ths	-	-	-	-
1975/76	17	99.00 ths	78	72.3 ths	135	66.8
1980/81	17	107.00 ths	75	79.00 ths	173	99.8
2003/04	42	121.5 ths	60	53,694	110	22.194
2004/05	-	-	59	55,794	110	21.719
2005/06	-	-	60	57,896	107	23.146
2006/07	-	-	60	56,872	107	23.844
2007/08	-	-	60	53,489	107	24.455
2008/09	59	136.587	60	52,579	108	25.315

(See [1], [3]-[5], [15])

There is a significant gap in Azerbaijan between the numbers of students in secondary and tertiary education. At the present time, the numbers of Azerbaijanis completing tertiary, particularly higher, education are far lower than not only those in developed countries, but also those in most of its former Soviet partners and neighbors.

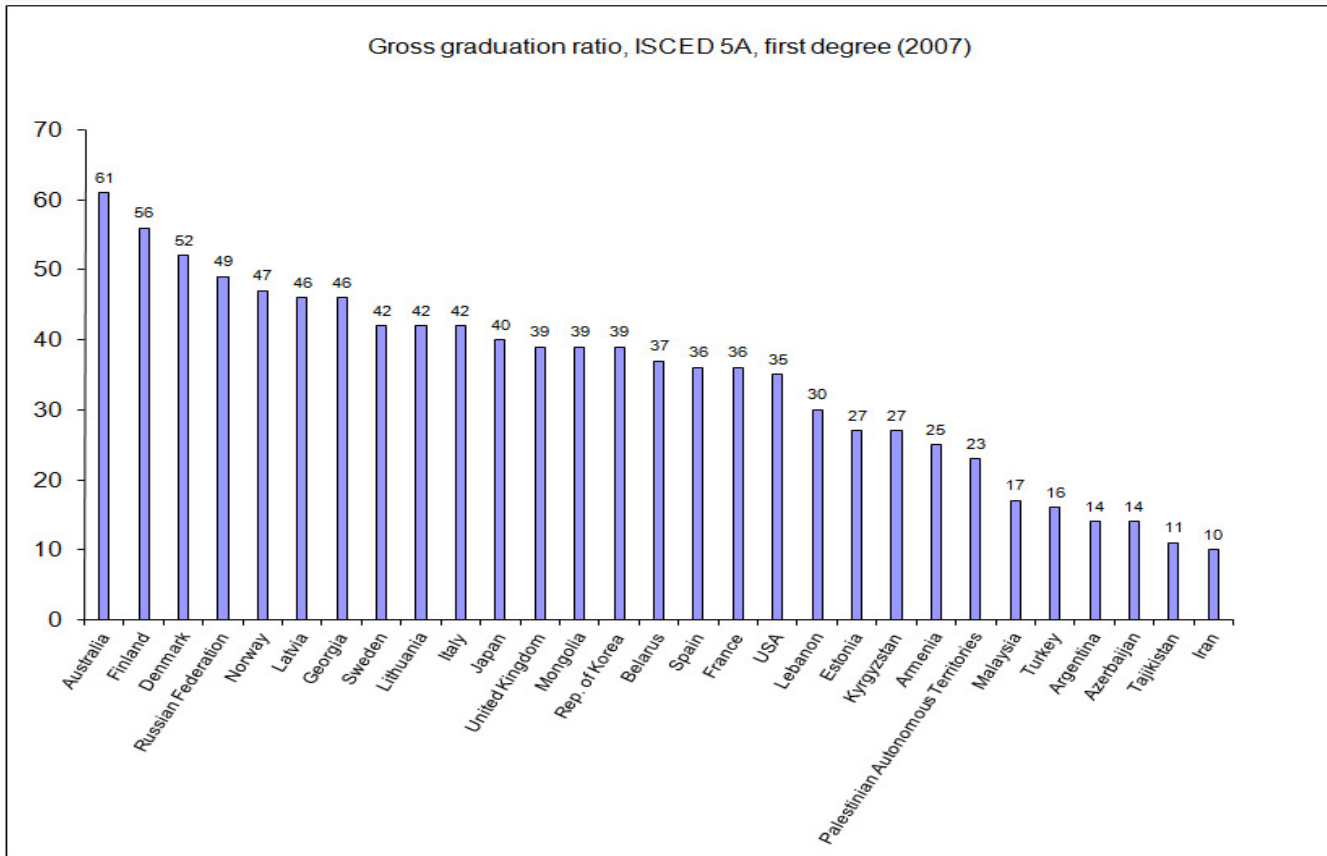
The number of students from a certain section of the population at particular levels of education is one of the principal measures of the success of education, as well as being an indicator of people's development in that country or region. The Gross Enrolment Rate in higher education (leading to degrees at bachelor or higher level) and in non-university tertiary education is the percentage of students at that level from a specified age group (within a five year range, for example, 18-22).

North America and Western Europe lead the gross enrolment rates in tertiary education, with an average rate of 71 percent in 2007, in Central and Eastern Europe the figure was 62 percent, in Central Asia and the Caucasus, 31 percent. The number of tertiary students worldwide increased by more than 50% in the seven years from 2000-2007 and around 2.5 times from 1991-2008, rising from 58 million to 144 million. (see: The UNESCO Institute for Statistics). Eastern Europe and countries of the former Soviet Union have a network of broad educational, scientific-research and cultural institutions. Because they were economies in transition, these countries faced many economical and social difficulties from 1990-95. However, many of them were able to match previous numbers, even improving on them in some cases.

The diagram below assembles in one group countries with a wide geographical spread and various levels of economic development – from Western Europe, North and South America, the Far East, the Middle East and Post-Soviet countries, particularly the Caucasus and Central Asia. Gross enrolment ratios, as can be seen, cover a wide range, from near-total enrolment to just 15%, in Azerbaijan.

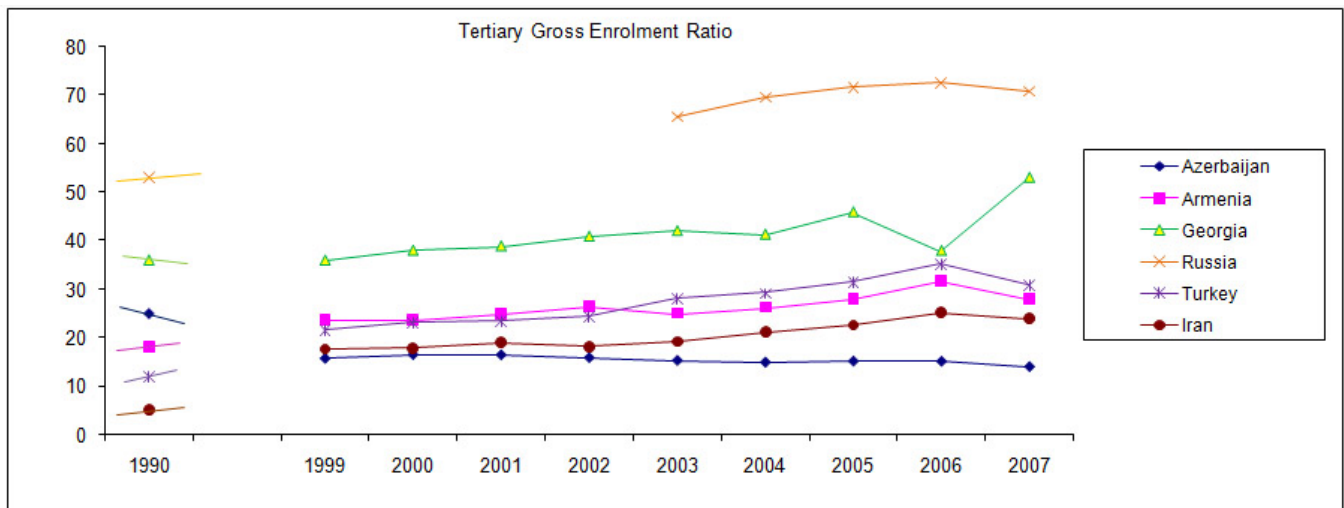
The decline in participation in Azerbaijani tertiary schools is shown by the absolute numbers: 163.901 (23.6%) in 1991, and 122.770 (14.8%) in 2004. Total enrolment was 136,587 (15%) in 2009. But the population of the country increased by approximately one and half million (1,447.4 thousand) in that period (1991-2009). While in 1991 there were 227 students per 10,000 inhabitants in Azerbaijan, this number has fallen dramatically to 153.5 in 2009. As far as dynamics are concerned, the figures increase year by year for all the countries; most of them rapidly, others more slowly. In Azerbaijan, the participation rate has fallen year upon year: 23% in 1990, 18% in 1995, 16.3% in 2000, 14.8% in 2004 and 14.7% in 2005.

**Diagram 5**



In regional tables relating to enrolment in higher education in 1990, Russia was placed first; Georgia was second; Azerbaijan third; Armenia fourth; Turkey fifth; and Iran was in last place. In 2005 (as well as throughout 2006-2009) the situation was as follows: Russia was again in first place (71%); Georgia was still placed second (53%); Turkey rose from fifth to third (31 %); Armenia was still in fourth place (28%); and Iran (24%) moved up to fifth, leaving Azerbaijan in last place (15%).[14], [8]

**Diagram 6**



It should be noted that during the last few years Azerbaijan has surpassed all these (and other) countries in the growth of its economy.

To increase the level of gross enrolment in higher education is one of the principal problems that developing countries strive to solve. Some countries have achieved dramatic improvements in this area. In 1999 the Chinese government, under public pressure, increased the number of students by 48%, compared to the previous year! The year 2002 was declared the beginning of mass popularization of higher education in China; compared with 1999, student admissions increased 226.6% in 2004! [22]. As a result, in 2007, the USA no longer held first place for the number of graduates of all HEIs in all three cycles; China took over at the top. The need for more graduates from higher education became one of the main headaches for states aiming to compete in the global knowledge economy.

What has been done worldwide in order to increase access to higher education?

In Japan and South Korea, with high rates of participation in tertiary education, most (around 80%) students study at private universities. In addition, South Korea sends large numbers of students to study abroad. In the academic year 2006/7, 62,392 South Koreans went to the United States alone to study (third behind India and China). In Brazil, 73% of students study at private HEIs. Only 231 of 2165 HEIs are public (and 85 universities from a total of 176 are private) [23]

In Azerbaijan, the government determines how many students will be admitted to each major field of study each year. This applies not only to state HEIs, but also to private HEIs. Thus it is entirely possible that the admission of students to certain departments in which private HEIs have invested for years and which have achieved good quality, can be stopped by the government.

At present there are a good number of HEIs and some of them certainly have the capacity to admit and educate more students than they are serving at this time. If private HEIs admit more students, it doesn't increase state expenditure; on the contrary, it would assist the state to plan its expenses in a more effective and optimal way. There are some exemplary HEIs, totally free of corruption, which have gained good reputations in the country and beyond. They could be motivated in order to protect "those men who do not have a price"; they could be assisted to admit more students. Of those who have an opportunity to pay for their education, many cannot enter HEIs due to the limited access to tertiary education in the country.

### **Categories of students attracted to different PSE institutions – based on scores in secondary examinations**

One of the peculiarities of the magister is that many of the applicants have jobs, so they are looking for modern education and tuition fees are no barrier for them to enter competitive, good quality programs. The situation in admissions to the first higher education degree is different from that of the magister; students from poor families will consider only programs free of tuition fees. HEIs are the first choice for an absolute majority of secondary school graduates. That is why almost all PSE seekers take part in exams to enter HEIs. Only applicants unsuccessful in this stage (some of them) will apply to non-university tertiary schools. The admission rules determine these situations. Admission announcements for non-university tertiary schools are held after the announcement of results of the exams for admission to HEIs. They are provided in parallel with the second placement evaluations for HEIs. The requirements for applications to these tertiary schools are lower (in terms of exams scores) than for HEIs; namely, the minimum score needed to compete for a place in HEIs is 200 or 250 of 700, depending on the major, but for non-university tertiary schools it is just 50. Around half of planned admissions (49.64%) are free of tuition fees.

Concerning admissions from lower-secondary schools to non-university tertiary education, 60.03% of admissions to state schools in 2009 were free of tuition fees. Admission scores are essentially lower than is the case with upper-secondary school graduates. The most competitive programs at undergraduate degree level are management, law, international relations, medicine, economics, finance; then, in some universities: petroleum engineering, computer sciences and computer engineering, mathematics etc.[21]

We didn't find any research work or any official data on the socio-economic background of students.

## Chapter 4: Financing PSE

The financing of the education system is the key instrument of state support and control, tested by the long-term experience of the developed and developing world.

During Soviet times all types and all levels of educational institutions were funded and managed by the government (or by enterprises supported by the government). There were no private educational institutions active at that time in the country. After the collapse of the Soviet Union, even during the last year of its existence, private HEIs arose, slowly at first and then like mushrooms after rain. Some of them were established by decree of public authorities, others at the expense and risk of personal initiatives; some combination of these was also affected. Over a period of time, the government promoted the establishment of private higher education institutions, legalizing some of them and closing down others. Private sector bodies had the freedom to introduce their own financing and cost recovery policies and to generate income; most of them succeeded in these tasks.

The current mechanism for financing PSE institutions in Azerbaijan does not encourage free competition. All state PSE institutions get their “share” of state funding, regardless of the education they provide, its quality, or its results. The competition-based financing of PSE by the state, at least for HEIs, is a subject of discussion between the government agencies responsible and other shareholders.

In reality, it would be better if the government directly aided those who successfully pass the admission exam to enter PSE. At that point, successful applicants would receive their share of the state budget and forward it to the institution that they choose to study with. In this scenario, all interested parties would gain. Without raising costs, the state would be able to distribute funds among the various PSE institutions fairly, and these institutions would strive to increase their quality in order to attract students with government scholarships. In this way the private PSE institution also receive the assistance it deserves from the state. Those applicants eager to receive a bona fide education could enter the institution of their choice with enthusiasm, instead of going to an institution solely because its tuition is free or at low cost.

In addition to finance for the students admitted, state PSE institutions could be given a certain amount directly from the state budget, the core monetary sum. Resources received from national and international research funds and development projects would be the third source of funding. Finally, donations to PSE institutions could be transformed into endowments, which is a vital source of development.

Another type of support for PSE from the state budget comes from institution-based, development-oriented programs, particularly the financing of a limited number of selected institutions in order to expand scientific research, partnerships, the enlargement of physical plant etc. Recent Japanese, Korean, Chinese and Russian programs of financial assistance to certain higher education institutions are good examples of exceptional, competition-based state support to distinguished institutions in the country. At the same time, financing PSE is not wholly the state's responsibility; the balance here is shifting towards the private sector. Total government assistance to some research-oriented public universities in the US comprises 20-25% of their total financing, or even less [24], [11].

### **Policy on financing PSE – including recent reforms**

In 2004, the Government (President) decided, for the first time in the country, to introduce tuition fees for state HEIs and for other PSE institutions as a key cost-recovery measure. The main reason for this was the government's inability to finance these institutions at the required level. Thus, in terms of covering student expenses, the PSE sector, with its student body, was divided into three parts: 1) students who are quite successful in centralized entrance exams to state HEIs receive full scholarships from the government, that is, the government covers tuition fees and, in addition, supports students' daily expenses (in the form of monthly stipends); 2) students admitted to state educational institutions with low grades have to pay tuition fees; 3) students admitted to private HEIs have to pay tuition fees, higher in general than those paid by fellow students in state institutions. A few private universities have had (and still have) scholarships, mostly merit-based, and some needs-based tuition waivers. Thus sources of financing (and management) of institutions have diversified.

Nowadays some larger, paid-education public universities get about one third of their budget in the form of student tuition fees; and the rest from the state budget. Of course circumstances depend on the ability of state institutions to earn from their tuition; the level of tuition also depends on many factors, such as fields of study, reputation, location, quality, international programs, state policy etc. The percentage of paid students varies from institution to institution, from major to major. Private universities, on the contrary, do not receive any public funding. However, consultation with national and international experts and with relevant state and non-state agencies is leading to the idea that direct financing of students admitted to higher education is probably more effective and fairer; it can change the current situation, particularly to the benefit of those outside state support, specifically private providers.



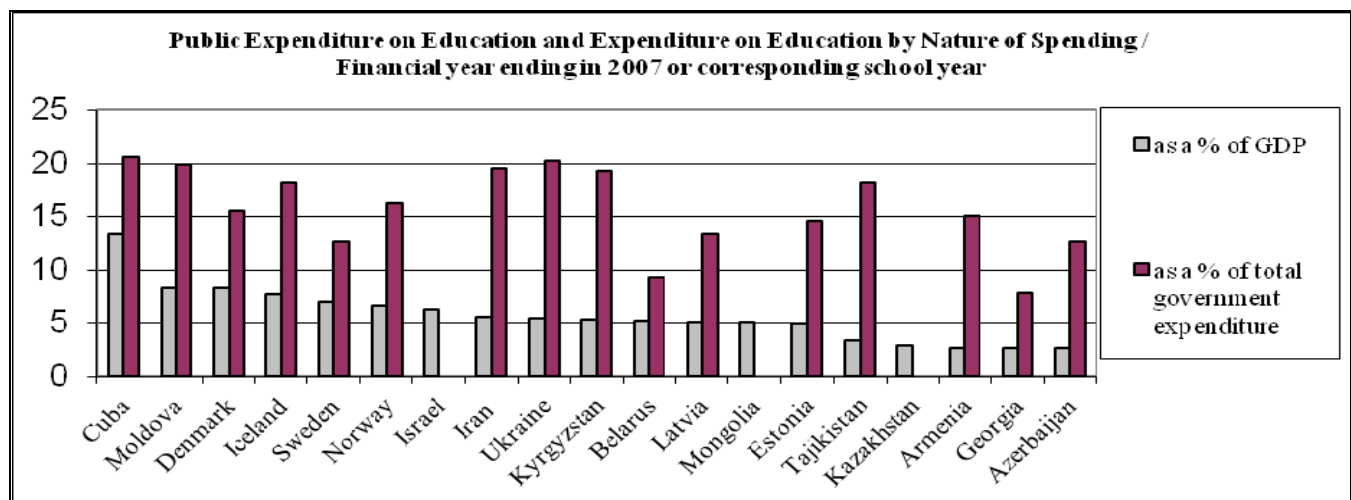
At times, non-university tertiary institutions have been established as a way of expanding specialized post-secondary education at a lower cost than university-based education. Per student expenditure is higher in universities and other higher education institutions than in the non-university tertiary sector, and the difference in costs is widening. Funding comes mainly from government, while companies, corporations and the private sector are also slowly trying to provide non-university PSE education and to invest in education in this way.

Government and international investment in the education sector has basically increased since 2006. Growth in 2008 was 4.34 times more than in 2006 [13].

### Public funding by types of PSE – budget allocations to university and non-university institutions

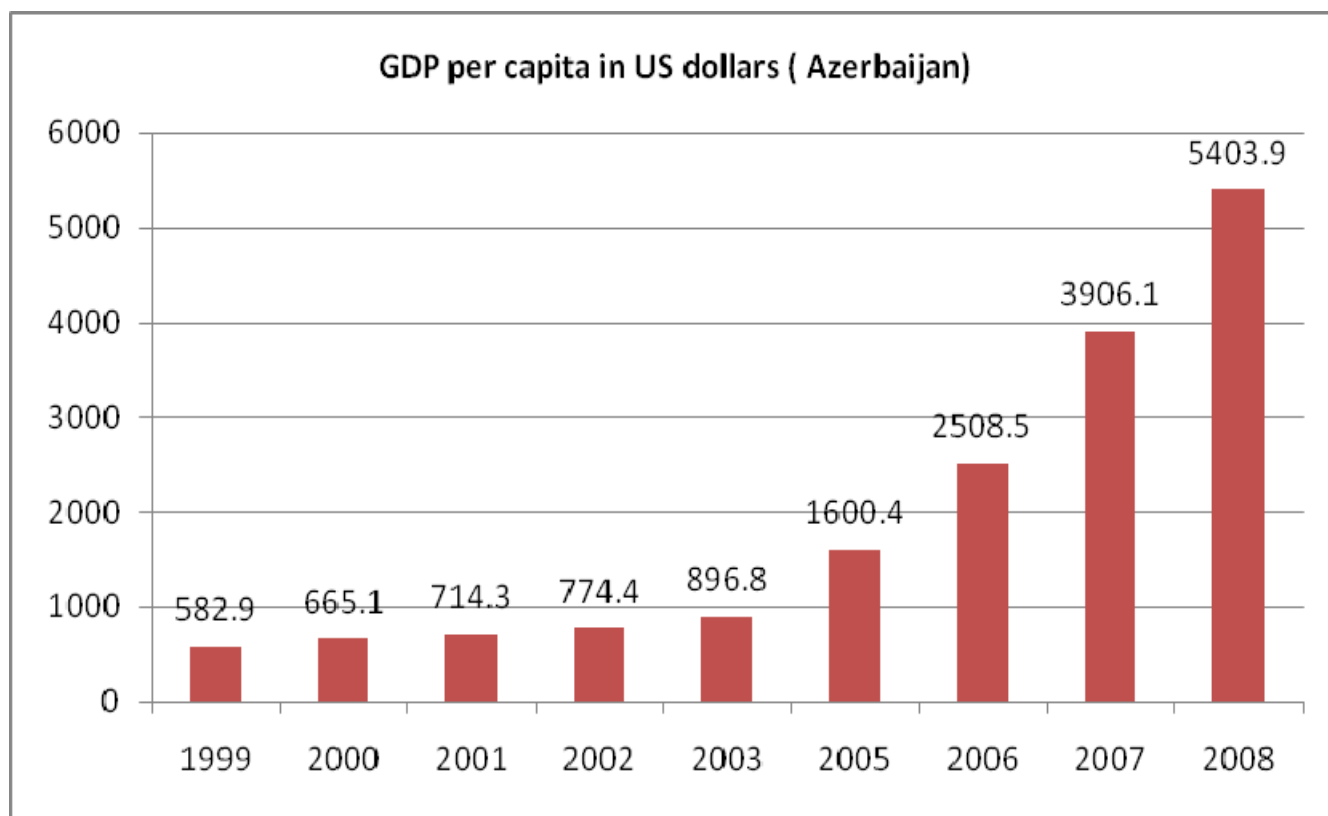
During the six years from 2003 to 2009, in absolute terms, public expenditure on the education system has increased six times in total. It is now 10.1% of the whole budget. High growth in the economy (over the past few years the highest in the world), with the lucrative production of oil, has enabled increased public expenditure. At the same time, public expenditure in Azerbaijan is relatively quite low, as a percentage of GDP. The following diagram compares public spending on education, showing it as a percentage of GDP and of total government expenditure; it includes some developed countries and many post-Soviet countries, including Azerbaijan. It indicates a lower rate in Azerbaijan, close to Georgia and Armenia but less than all others. Azerbaijan is among 9 “countries with extremely low levels of public spending”; it amounted to 0.2% of GDP in 2007, it stands at 0.3% in 2009. [14; pp.53-54]

Diagram 7



One helpful (not yet absolute) indicator of the wealth and welfare of a country is its GDP per capita. Growth in both GDP itself and GDP per capita allows increases in government expenditure on education. This has happened in Azerbaijan, as can be demonstrated in absolute numbers. At the same time, a growth in public expenditure on education proportional to GDP per capita is improbable, at least in the early stages of economic boom (?!). In other words, total public expenditure on education per student as a percentage of GDP per capita, as given below, leaves much to be desired and has a quite different dynamic from the pleasing trend in GDP per capita itself. By the way, as also shown in diagrams 8 and 9, the years 2008 and 2009 saw improvements in public spending on Education, particularly PSE; one can interpret this advance as a desirable turning point.

**Diagram 8**



**Diagram 9**

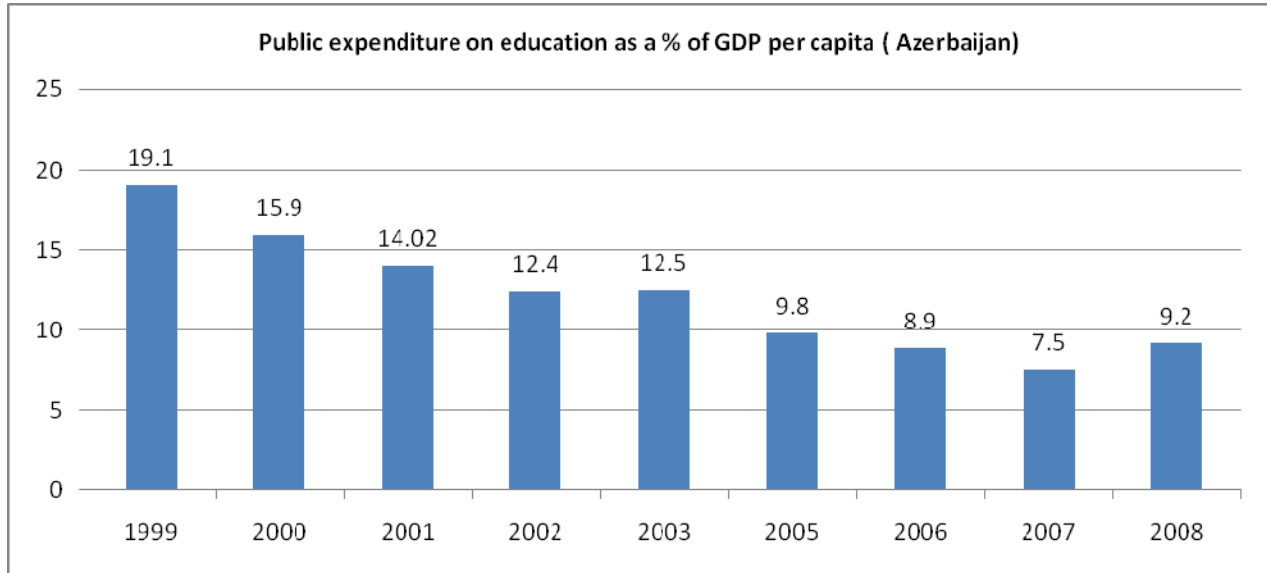


Diagram 8 shows GDP per capita for the same period (in U.S. dollars with a nearly constant exchange rate for December 2009 from the Azerbaijan National Bank). Diagram 9 explains public expenditure on education as a percentage of related GDP per capita for the same period.

Let us look at another diagram in order to understand public expenditure on various sectors of education separately for 2009 (expressed in \$US with the average exchange rate of National Bank of Azerbaijan for December 2009). A rapid glance at the picture reveals that vocational education is distinguished by its relatively high cost of delivery and that expenditure on higher education is moderate. [13], [15]

**Diagram 10**

Level of education	Public spending per capita-student	Growth since 2007 (x time)
Pre-school education	1100	1.8
General education	720	1.8
<i>Particularly:</i>		
Primary education	980	1.4
Lower-secondary education	965	1.75
Upper-secondary education	700	1.8
Non-tertiary vocational education	1380	1.55
Non-university tertiary education	920	1.7
Higher education	1460	2.18

Salaries in tertiary education, particularly in higher education, are essentially higher than in other divisions of the education sector; the demand for tertiary teachers is more competitive, it is influenced partly by the international market. Salaries of professors, associate professors and others at HEIs in 2008/9 school year have increased 2-3 times; they are not yet close to the Eastern European average. One more factor, in addition to the reorganization of the country and its economy, which exacerbates the situation concerning salaries in education is that the teacher-student ratio in Azerbaijan is lower than in the absolute majority of countries; it is 1:7.3 in higher education and 1:8.5 in non-university tertiary education (other data for tertiary education indicate 1:8.4).

### **Cost recovery – fees in public institutions, student loans etc.**

The government has not developed a student loan program. A couple of private banks have tried to introduce student loan programs. Unfortunately, their conditions were too demanding for students. In particular, in every case the interest rate was more than 20% (in the U.S. interest rates vary between 6-8%). Most HEI senior managers believe that less than half of the budget of a true HEI (state or private) should come from students' tuition fees. The other part of the budget should come from the state, corporations and other sources. In this light, the reasoning behind the application of VAT and other taxes to PSE in Azerbaijan is, to put it mildly, not clear. In addition, the application of tax exemptions to companies, corporations and individuals who sponsor PSE institutions could generate incentives for giving; this is vital for the development of PSE education. In the USA and other developed and developing countries, tax reductions play a decisive role in the growth of HEIs. [25]

On a par with state funding, student tuition fees are an important financial resource for PSE institutions. Tuition fees for non-university tertiary education are on a scale ranging from US \$125-1,000 per year in 2009; they are around US \$625-3,250 in state HEIs, and US \$1250-5,000 in private HEIs.

Approximately half of student places in all state HEIs combined, to be precise 49.57%, were allocated for tuition fee-based admission, and private HEIs' share was 13.45% in 2009. For magister courses, 60.78% student places were allocated for tuition fee-based study.

In non-university tertiary schools also, about half the student-graduates of upper secondary schools, 50.36% to be exact, were expected to pay tuition fees. 60.03% of admissions from graduates of lower-secondary schools were planned to be fee-based.

## **Private and cross-border institutions – sources of funding**

The main source of funding for private institutions is the student tuition fee. This is why their priority is to try to increase the number of students by all means. Very few of them, perhaps only one - Qafqaz (Caucasus) University - has external support, in this case from a Turkish foundation and Turkish businesses. Another source of funding for private and public PSE is fundraising, mainly through applications to various American, European, Japanese and a few other state or private foundations. As for supporters of PSE, one may write a long list, including the US State Department, the Open Society Institute Assistance Foundation, the Eurasia Foundation, The American Bar Association, the World Bank, the Asian Development Bank, the TACIS-TEMPUS Program, the European Erasmus mobility program, the Japan Foundation, the Sasakawa Peace Foundation, DAAD, IREX, Fulbright, the UN, UNESCO, UNICEF, oil and other international companies, embassies and, gradually, some Azerbaijani companies. Most of these programs provide funding not directly, but by supporting partnership projects between two or more universities from developed countries and from Azerbaijan, or by supporting research projects and the mobility of scholars, administrators and students.

Some universities have developed University-Industry relations through short-term and long-term training programs, including in-service training for companies and corporations. In general, there is very little income-generating activity among HEIs, even none in most cases.

## **Patterns of expenditure by type of PSE – share of expenditure on salaries, libraries, research, etc.**

The main items of expenditure for HEIs are: salaries, state social security payments, stationery and household expenses, printing expenses, repairs and security, transportation, utilities (electricity, gas, water, heating, sewerage and others), communications (phone, post, internet), business trips, procurement (soft furnishings, bedding and special clothing, inventory and equipment), expenses related to the provision of amenities, vehicles and other machines and equipment, scholarships for students, rent and hired labor services, pension and social aid, and other social security expenses.

State HEIs receive public funds mainly for salaries and so-called additions to salaries. State institutions can also apply to the government for special funding for specific programs, such as construction or for serious repair work. Most other items of an institution's budget come from tuition fees. Concerning the composition of shares of expenditure, apart from

salaries, institutions are free to make their own arrangements; initially they have to ask for the approval of the relevant state agencies.

Only six of the state HEIs have so-called autonomy, four of them in Baku, one each in Ganja and Nakhchivan; they receive public money directly from the Ministry of Finance, whereas all others are affiliated to the Ministry of Education, which is also responsible for their financing issues.

## Chapter 5: Management of PSE institutions

Regulation and centralized management are widespread throughout the education system of most post-Soviet countries, and it has occasionally become very bureaucratic. At the same time depth of planning is one element lacking at various levels of administration. In the state sector of education autonomy is weak, in the private sector there is no real independence. Private PSE institutions are, in reality, only semi-private; they have no right to develop their own admission rules, grant their own diplomas, or start new programs without government permission – and this permission is not regulated (there exist no written rules). The state would lose nothing by saying to some private PSE institution which controls itself rigorously and produces high-quality work, “You are free; please do your best.” Without a doubt, the state would benefit in this case (indeed it would be a win-win game!); it would help to test new experience in the country and contribute to a new modeling of the future.

The problem isn't as simple as it seems from the outside. Many PSE institutions are not able to take the steps necessary for independence and autonomy. They neglect quality control. And the government, instead of implementing the correct policy, puts tight restraints on all PSE institutions, irrespective of their quality, standing or character. A state policy of “give to each PSE institution the independence and assistance which it merits” could be the principal guiding rule. If the state, while searching for and applying average, common measures and regulations in PSE, does not recognize the significant differences between the weaker and better institutions, it will in reality greatly damage this diverse and complicated sector. An equalizing policy doesn't stimulate those who are advanced, and it doesn't motivate those who are behind.

Autonomy gives an opportunity to follow the positive and changing trends in the world, the ability to maneuver, to use completely creative thought and energy and to achieve new content, form and quality. Starting from 1990, developed states have greatly increased the autonomy of their PSE institutions. In order to create an atmosphere of competition inside the country, and to take the necessary steps in order to gain success in the world, it is crucial and indispensable to raise autonomy, capacity and the quality of institutions. Altogether, a tight, centralized, “top down” administration seriously interferes with the dynamic development of the PSE; it doesn't provide the flexibility to enable it to respond in time to the requirements of the changing environment.

Internal management of PSE in Azerbaijan is not very corporate. The rector, president or director in PSE is like a master with complete supremacy, and there is no body of governors to share the power. In general, the University (School) Council is not powerful. There is no

time limit on the position of rector, director, or head of a public PSE institution. They may continue for a long term or they can be stopped at any time. At the same time, the appointment and firing of rectors or heads of institutions usually happens very abruptly.

A better way would be to set up a board of governors and/or trustees (this is not yet the case in Azerbaijan), and delegate such tasks as developing a strategic plan, appointing suitable candidates to high positions, and raising some funds etc. to this board. Day-to-day administration and management responsibility is entrusted to the rector/president/director and other high officials around him, in addition to the work done by the institution's council.

It has become necessary to set up broad networks of cooperating HEIs within a country, group of countries or worldwide in order to gain influence in the globalized world. Mutual consultation on education policy, joint degree or double degree programs and accreditation can help raise the quality of education. The Association of Azerbaijani Universities, the Association of Private Universities and regional HEI associations (such as the Black Sea University Association, the Association of Caspian Universities and others) are weak, with little, mainly symbolic, activity. The European University Association is an intermediate level network to all appearances. A significant example of successful networking is the Bologna Process, at present being put into effect in most of Europe. This type of networking plays an important role, both in strengthening the quality of education and research in institutions, and in reducing their dependence on governments. At the same time, tight centralization doesn't allow Azerbaijani HEIs to develop joint degree type programs with their foreign partners, first of all because private universities haven't even the right to award their own diplomas to graduates. It is probably time to give the green light to at least some private HEIs able to carry out this task in Azerbaijan.

The participation of students in the management of HEI, in this way helping to increase the quality of education and services, is crucial. The level of student involvement in HEI affairs in the country leaves much to be desired. Students ensure that principles are not just discussed, but put into action. The best HEI is distinguished not only by its scientific research or modern and competent education, but also by the level of a student support system which assists students in all relevant fields, taking into account all the general problems and individual demands of students. Only a few universities in Azerbaijan have been able to develop student support systems; they have been officially established by two private HEIs, to be exact, Qafqaz and Khazar universities.

The student-centered education model demands the establishment of active relations with students. According to the policy of student support systems, all students must to be informed about the financial resources, foundations and various scholarships programs.



Students need support in the counseling, psychological, medical and legal fields. It is clear that students with physical and mental problems need real care and service. In this area, unfortunately, there is no reason for pride within the PSE institutions in post-Soviet countries. Engagement in sport or arts makes student life lively and interesting, bringing together both the student body and the PSE institution. These areas are probably among the best developed services at HEIs in Azerbaijan [8], [10], [11].

Student organizations play positive roles in the development of features like leadership, self-government and work habits. They can play an essential role in fighting corruption, bribing for grades and the seeking of other privileges; on the whole helping with institutional transparency and accountability. There are a few positive examples but, in general, independent student organizations are weak points of Azerbaijani HEIs.

One of the most important support services for students and new graduates is a career center. Only a few universities have been able to develop career centers; they are not very experienced and are generally weak. These centers familiarize the students with jobs, hiring processes and employment psychology and methods. They also establish a network of companies and students, and match students to potential employers.

The creation of an Alumni Association is one of the most serious tasks to be completed in PSE. No real successes have been achieved in PSE institutions here.

An international student support service is peculiar mainly to higher education. It turns the HEI into a place of diverse cultures, races, religions and languages, which enrich and encourage one another. The number of international students is increasing in the country; students come mostly from Asia, Africa and post-Soviet countries, not so many from America and Western Europe. Having an international environment in the educational institution plays a great role in the removal of existing prejudices, in developing tolerance and in fostering a greater perception of different religions, cultures and races. The participation of foreign students increases teachers' responsibility and also improves the institution's care in hiring teachers and scholars.

The support of international organizations and partnership programs with foreign educational institutions are important also in introducing modern models of educational administration and management into the life of Azerbaijani PSE institutions.

### **Ministries responsible for non-university PSE institutions**

Until 2000, non-university PSE institutions were affiliated to many ministries, other state agencies and state-supported enterprises. The Ministry of Education view is that this

situation has vastly weakened control of the quality and motivation of students, teachers-masters and enterprises defined as partners. The President of Azerbaijan issued a decree in 2000, “On improving the education system of Azerbaijan”, particularly changing the affiliation of many vocational schools from various ministries into the Ministry of Education. The re-establishment of two well-known colleges was included into the above-mentioned Presidential Decree of 2000, namely the College of Fine Arts at the Azerbaijan State Academy of Arts and the College of Music at the National Conservatoire. Another new college, the College of Construction was established in 2004, at the Architecture and Construction University.

Of the total of 61 non-university tertiary education institutions active in 2009 in Azerbaijan, all but three are state institutions and most of them, to be exact 45, are affiliated to the Ministry of Education. Other affiliations are to the Ministries of Health (8), Culture and Tourism (2), Internal Affairs, Emergency Situations and to *Azerittifaq* – the Azerbaijan Central Cooperation Union.

There are only three private institutions and two of them are connected to private universities.

### **National and regional agencies for managing university education**

The Ministry of Education is the main body managing higher education institutions. 26 of the state HEIs are connected to this Ministry; 6 of them have autonomy, which for the most part means that they receive public funds, but not through the Ministry of Education. Another group of 5 state and public HEIs are affiliated to the Ministries of Health, Culture and Tourism, Foreign Affairs, Justice and Emergency Situations; the Azerbaijan Medical University is the oldest and the largest in this list, all the other four are newly established or are in the process of establishment. 6 HEIs are affiliated to various force-related ministries and services, namely the Ministries of Defense (3 institutions), Internal Affairs, National Security, and to the State Frontier Service. 3 HEIs were established by non-government organizations; to be exact, the Baku Islam University affiliated to the religious agency the Caucasian Muslims Board; the two other affiliations are to the Confederation of Trade Unions and *Azerittifaq* – the Azerbaijan Central Cooperation Union.

Private universities are managed by their founders, that is, by people; with very few exceptions, there is no corporative governance. At the same time, all private HEIs, similarly to state institutions, are affiliated to the Ministry of Education, except for on issues of finance.

Two cross-border institutions operating in Azerbaijan have double management systems; strategic management and quality control is with the foreign, mother university, operational management is under local administration.

The rector of a state HEI is appointed by the President of the Country, vice-rectors are appointed by the Ministry of Education, or another related ministry or state agency upon presentation of his/her candidature.

The State Student Admission Committee, the Department of Humanities at the Azerbaijani Presidential Administration, the Education Commission under the President of Azerbaijan, the Council of Ministers (Deputy Prime Minister and Department of Science and Education) and the Department of Education of the Milli Meclis (National Parliament) are other national agencies more or less engaged in the strategic development and management of higher education

### **Recruitment of teachers**

Recruitment of teachers is the direct responsibility of the educational institutions at all levels of PSE. All at once, the Ministry of Education or other responsible state agency approves the total number of tenure teachers and scholars, and the total class load related to the curriculum. Nevertheless, changing management, varying administration, irresponsibility and, probably, bribe-taking, have lead to an enormous surplus of teachers at all levels and in all types of education. From a totally planned economy in the country, to all appearances it became complete planless (or planned the wrong way round) in respect of teacher recruitment. Simultaneously, there were acute shortages of teachers in remote mountain areas of the country; to solve it the Azerbaijani government developed a special program in 2005 to motivate teachers to go to these areas.

Some higher education institutions, basically private universities, are gradually hiring international professors and instructors, mainly in the humanities and social studies.

### **Quality of education offered by different providers**

The lack of a freely competitive environment in the higher education system is one of the key reasons for the backwardness of PSE institutions. The weakness of the administration culture in PSE institutions, the consequences of the transition economy and the targeting of only trade interests are among factors hindering quality work. There exist diploma-mill PSE

institutions (in both state and private sectors) earning huge amounts of money without providing a serious modern education. Unfortunately, they have their own customers and clients, specifically, students and parents just looking for easy diplomas as in the inertia of the era of planned economy, when there were roundabout ways to find a job with all kind of diplomas.

Today HEIs are in competition, worldwide and within individual countries, the same goes for many non-university tertiary schools, like the community colleges in the U.S.A. The emphasis on competition now is not just for prestige, but it is simply vital. To attract more talented students (from all over the world!); to demonstrate eligibility for more financial assistance from the state (if that is possible); to receive greater research, training and development projects from the industry and business world (a weak point in Azerbaijan) are crucial for the development and maturity of PSE institutions.

Quality in education (as in other areas of human activity) refers to the possession of higher standards; it is a different and exceptional feature, and it means excellence. Quality means the culture of an educational institution. Quality requires participation; it is the product of team work. Quality means the rule of a system and methods aimed at development, and completion of the necessary tasks in a timely manner. On the other hand, quality is a set of minimum standards for all activities in an educational institution. Quality is the fundamental change of the existing form. It is the process that requires continuity of internal evaluation and a self-critical approach. Quality is the link between reality and perceived circumstances, the match of demand and result achieved. Quality is also the proximity between insider vision and external outlook. ;10]

One of the most significant questions is - who is responsible for measuring quality? There are at least three potential candidates for the responsibility of measuring the quality of education in a chosen educational institution. These are: the government, the educational institution itself and independent agencies such as accreditation agencies and professional associations.

In the case of measuring quality by the PSE educational institution, a serious self-evaluation, with the participation of faculty and staff members, administrators and students has to be carried out. Only two private universities in the country have internal evaluation cultures, namely Qafqaz and Khazar universities. The first has Turkish experience and the latter has developed this culture with the support of U.S. and U.K. universities. They try to review critically all areas of operation, reveal strong and weak points, determine objectives and the obstacles to them, compare and contrast themselves with their main competitors, find ways of development and draw up plans of action to overcome deficiencies. [10], [11].

## **Quality assurance mechanisms and their impact on PSE – national accreditation agencies and PSE institutions**

Azerbaijani society and government discuss problems of quality first of all for the primary-secondary and higher education levels. They only occasionally look at pre-school, non-university post-secondary education and graduate programs, mostly on the initiative of anxious scholars and educators. This dissection can be explained easily if we take into consideration two issues which probably occupy most minds and souls: secondary education is compulsory and a trampoline; it is the main corridor leading to further education, to the prestigious phase of education. Let us think on behalf of the careful Azeri parent and his or her boy or girl with intent to cross the threshold of the “House of Wisdom”. Well, but it is so! A higher education diploma is a “card leading to the good life”, or a “good start in life”. Here, at this point, active members of society, that is, parents and senior secondary school students, will decide to take a higher education institution by storm. In the case of failure, let’s go to some easy foreign institution, or wait for next year or, if one is not afraid to lose face, let’s enter a non-university tertiary institution.

Where to go for higher education? There are a few prestigious private universities with good quality education, with broad international programs, no corruption there, English is the medium of instruction in many of their programs, the curricula are modern, similar to HEIs in the developed world. Let’s do it! Others imagine: I’ll probably have to pay for my studies at a private university. Why? State universities have many more places with free tuition. Also, prestigious state universities may be more corrupt, but they are state! There is no risk of them being closed, as happens from time to time to private universities. Of course there are some state HEIs which are less corrupt, or not corrupt. There are also other private universities, as well as other state institutions, with an easy life. There are options, but not enough, because student enrolment is too small. Why?

Which universities possess quality assurance mechanisms? Khazar University was the first in the country to establish a Quality Assurance Center with the support of the European Commission’s Tempus program and European partner universities (previously, similar work was done in part with the support of American universities). The main philosophy is that there are four sides or ideas whose harmony is believed to provide quality in education; they are: learners, facilitators (teachers, scholars, experts), conditions and environment (the moral environment and management, physical plant, library-information resources and equipment) and, finally, dynamic educational model and modern programs.

Two other (private and state) universities are trying to do similar work on quality assurance mechanism.

The first accreditation process in independent Azerbaijan began in 1993 under the Ministry of Education. Its only purpose was to examine private HEIs; their number was increasing. Almost all candidate-institutions were approved. The next step, in 1995, was higher – the State Accreditation Commission, affiliated to the Council of Ministers came onstage. Many candidate-institutions were approved; during the process even a number of new institutions appeared. Most regional branches and a few capital-based institutions were rejected. In 1998, this Commission was closed down. As a result, the country acquired 15 private HEIs. At that time our neighbors' private sectors were much larger – more than 200 in Georgia and more than 60 in Armenia.

But life without the Accreditation Commission was not easy. There was no official way for private institutions to apply for external evaluation to allow them to start new majors or to increase student enrolment. Some monopolistic trends favoring state universities also appeared; student admissions to some prestigious majors were stopped in most private universities.

Nevertheless, all the problems of PSE are the subject of discussion at a high level of government and the near future seems brighter.

There is now an Accreditation Commission of the Ministry of Education. It is voluntarily in character and its inability to guarantee the inviolability of existing and newly-approved majors essentially reduces its significance.

The accreditation agencies, which put forward their opinion from the outside, usually take the internal institutional evaluations as a starting point. They learn how objectively evaluation was carried out, clarify the depth and breadth of the analysis and conduct interviews with students, faculty, administrators, senior and middle management, and those who work in the service sector. As a result of the accreditation process, besides providing professional insights into the current situation at a given education institution, the agency responsible for accreditation also suggests ways to improve quality.

In Azerbaijan there are no agencies or associations that measure the quality of education independently. Probably, the idea here is that “this area is a matter only for the government”. At the same time, it is also the fact that there is no serious agency claiming this mission. A state monopoly of quality measurement also exists in other post-Soviet countries, in countries with transitional economies, and in many Asian and African countries.

On the one hand, accreditation is important in considering the purpose of diagnosis – it shows that the quality and standards are not stagnant, it shows their dynamic, it sees the functioning of an educational institution as a process and helps in indicating ways of

development. On the other hand, accreditation is a judgment on quality for official recognition and has the function of regulating the process. In this process the accreditation agency cannot ignore the special features of institutions, derived from their nature and objectives, and their willingness to be distinct; but more importantly, the accreditation agency has to support such desires of institutions. The institutions that achieve accreditation, and their students, should have the right to apply for government managed loans, get financial support and participate in programs of different state (and probably other) funding organizations.

In any analysis of quality, and during accreditation, one may put more focus on one of these three important factors – entry-input, process and exit-output.

The dangerous lack of an independent accreditation agency is compelling PSE institutions to look for international quality evaluation institutes in spite of the absence of any legal authority in the country. The Salzburg Seminar - Visiting Advisors Program (Baku State University and Khazar University), the Turkish Higher Education Commission (several state universities, Qafqaz and Khazar), the Iranian Ministry of Research and Education (several state universities and Khazar), etc. are examples of external (foreign country) evaluers.

## **Chapter 6: Conclusions and Recommendations**

The expansion and growth of diverse PSE in Azerbaijan have been under way, with specific peculiarities, during the Middle Ages, Russian Period (1828-1918), the short First Republic Period (1918-1920), the Second Republic Period, to be precise, Soviet times (1920-1990), and the Third Republic Period, that is, the new period of independence beginning from 1991. Growth in numbers and types of PSE was impressive during Soviet times. Decisions on the decentralization of higher education and the optimization of sizes and resources, as well as the world-wide announcement on the “complete and irrevocable victory of socialism”, in 1959 brought the USSR certain successes in PSE, but didn’t change the direction of history. The economic, political and moral crisis of the Soviets particularly, and to a great degree, led to a crisis in education and research, and finally to the collapse of the whole Soviet-Socialist system. During the late Soviet period and at the beginning of independence, the country faced huge problems in the economy, in war with its neighbor, in politics, in a crisis of values, and in education and scientific development. The problem was not even with the development, but with the survival of PSE, principally the vocational-technical schools and non-university tertiary schools.

During the independence period of the 1990s, the level of poverty, shortages in public financing and the inflexibility of educational institutions resulted in a loss of quality in PSE and a loss of attractiveness for non-university tertiary and non-tertiary education.

Countries in transition and, often, in the early post-transitional period, including Azerbaijan, changed constantly, but this was not the case for vocational schools. Shortages of skilled workers and technicians are obvious. Increasing demand for rapidly changing skills in new, technology-based services and the inability of old-fashioned schools to train students in these areas are among the main factors that brought non-tertiary vocational education system to greatest crisis; many of them have been closed. These schools were not able to respond to changing demands. Shortcomings in teachers’ qualifications, in financing and in industrial relations, huge imbalances (surplus) in teacher/student ratios, and out-of-date curricula – these are among the parameters of decline. At the same time, employers and students believed that post-compulsory formal education, leading to the labor market, had become too lengthy. Formal education demands time and huge investment.

Slow change, a lack of resources, centralized (even over-centralized) transition processes from upper-secondary schools to tertiary education, the renewal of physical plant, emergence of new educational institutions, some salary increases, study abroad programs etc.



are among the main positive and negative characteristics of the transitional and, if we may say, post-transitional period in Azerbaijan. Unfortunately, access to PSE, particularly in higher education, is very limited; the country's comparatively low gross enrollment rate is not changing. In order to achieve at least average, if not international standards, radical changes must be made here. Legislation and various decrees help to identify problems and areas to be advanced, however practical decisions and implementation are slow and sometimes not to the point.

Diversification of PSE is an attempt to accommodate the greatest number of learners, even to cover all members of the population with (and without) lower secondary school diplomas. Societal and economic demands accord with the work of diverse PSE providers; then these demands join hands with the providers. In Azerbaijan (and in other post-socialist countries), diversity in substance and form, in types of institutions, in study areas and level of courses has been increased by adopting western models to meet changing local demand, by introducing new educational institutions and by reforming the whole education system.

The private education sector has already essentially contributed to progress in some vital problems of education, such as modernization, internationalization, quality, access to education and financing. Society and government are slowly appreciating this. At the same time, some officials in government and some members of society probably view the private sector as a threat to the public sector.

Almost all types and all ranks of educational institutions try to deliver graduates to a certain competence and definite level of skills. The main problem here is how to satisfy most employers about the adequacy of the competencies and skills developed. In order to meet these quite diverse requirements, all decision makers – governments and providers of education and training - try to restructure both the degree award system and non-degree training schemes. Quality is the main focal point, oriented towards reforming PSE. So, questions about the nature of quality and what kind of indicators or standards are most appropriate to measure it, are also important. In general, there is no great evidence of an internal evaluation culture, or of the existence and efficiency of quality assurance mechanisms at PSE institutions, in many cases these are visibly low priority. But the question “who is to judge?” in measuring quality is much more important than many others. A well-established accreditation system, which should be independent of government, is vital to the introduction and management of some order in PSE institutions.

There must be adequate principles and standards in the management of PSE. Wide international experience and national historical development ought to help in formalizing the main ideas and standards in raising a new, well-established PSE system. Vocational schools

with the right to award the upper secondary diploma, non-university specialized tertiary schools and higher learning institutions try to adapt to the changing labor market.

There has been no great development of a system of student support. Student participation in institutional management is weak in general, almost non-existent, exceptions are comparatively few.

Traditions of centralized government control and the autonomy of education institutions are always and everywhere in conflict; the naïve thought that innovations should be introduced overnight hasn't any real basis. New corporate, harmonious, decentralized and flexible management, networking in order to improve policy development and quality, well established and accepted norms and values, output-oriented actions and activities are the characteristics of a competitive PSE institution.

Internationalization is underway and includes Azerbaijan. Crossing borders has become simple, for people and for ideas, in spite of xenophobia and prejudice.

A system of student loans, this vital instrument of government-supported education, is not established yet in Azerbaijan, Patterns of expenditure at HEIs are not well developed or fixed.

Accreditation and public spending are not linked, and this is one of key disappointments in the management and financing of PSE. A fair share of public funds is the subject of heated discussion everywhere. Public expenditure is the main tool with which to appreciate, differentiate and manage in general, PSE institutions. But it is not yet based on competition and rivalry; light is seen at the end of tunnel as the main state agencies and international partners are discussing how to apply per-capita models of financing for HEIs, including private ones. The degree of dependence of PSE institutions on public funds is a subject for governments and legislation. In Japan, for example, the operational public budget for national universities is reducing by 1% each year except for the salary component of faculty members. [26].

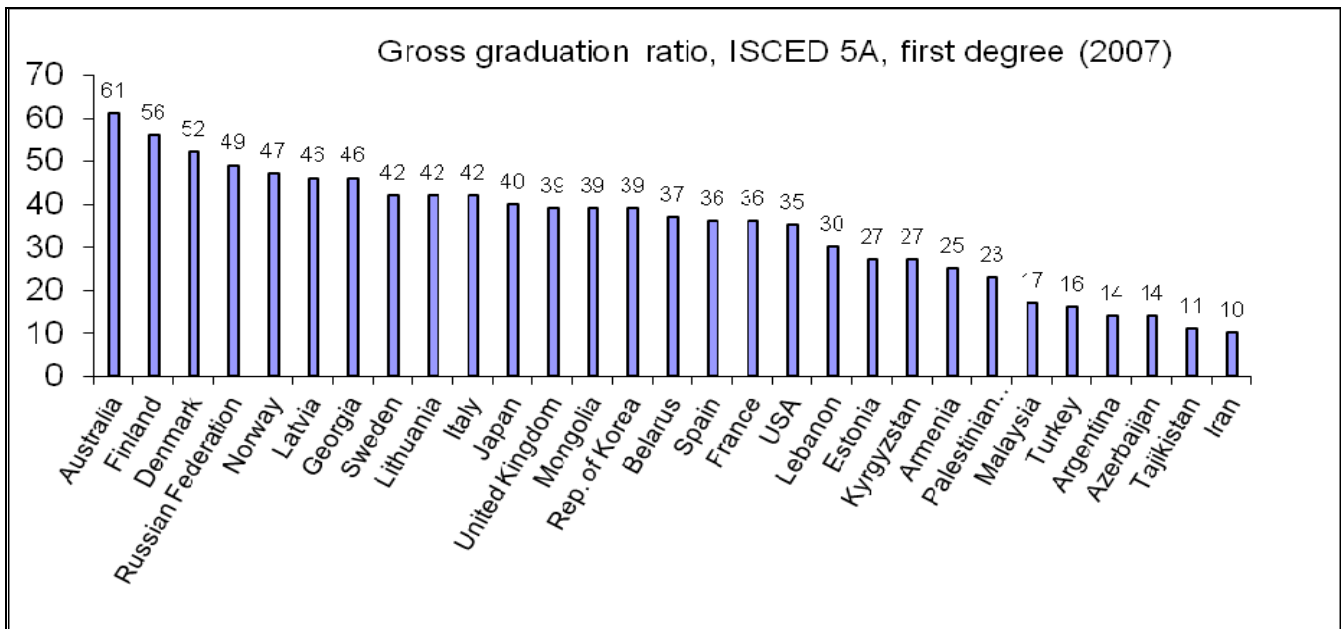
Some international, particularly European, organizations financing educational projects don't take into consideration the size of population in Azerbaijan, which is more than the sum of the Georgian and Armenian populations; in financing of the same or similar projects for the three South Caucasian countries, sometimes Azerbaijan receives even less than its neighbors.

## **Employment opportunities for university and non-university PSE graduates**

The gross graduation ratio for all levels of education is usually, to a fair degree, less than the gross enrollment ratio at the same level. In comparisons of different countries these two ratios demonstrate some correlation; a country with a higher enrollment ratio has, in general, a

higher graduation ratio [14]. Comparing diagrams 5 and 11 (see below) leads to the observation of very different and dissimilar graduation tendencies - big differences (Republic of Korea, USA, Argentina, Estonia, Iran), balanced to some degree – the majority (Finland, Denmark, Norway, Russian Federation, Japan etc.) and a few topsy-turvy (Georgia, Azerbaijan). The case of Georgia is unique - the graduation ratio is higher than the enrollment ratio; this can be explained by the huge number of private HEIs, the intensive enrollment policy of state HEIs some time ago and recent regulations overturning previous policy. The case of Azerbaijan is interesting as well – numbers are quite small, but enrollment and graduation are almost equal. The main reason for this phenomenon is, most probably, the weak filtration function of HEIs in general, in an open exit education process – which roughly consists of coming to receive a diploma on time.

**Diagram 11**



It is impossible to overestimate some government efforts to solve problems of shortages of qualified experts in certain areas and to help new graduates from HEIs, and sometimes from non-university tertiary schools, to find jobs. For instance, the “State Program on maintenance of teaching cadres in the network of general education schools for 2005-2009” has played an important role in solving the problem of shortages of teachers in many remote countryside schools. Around 6,000 teachers have been motivated (mainly in the form of higher salaries) to go to schools in remote areas during these years.

During the last two or three years, the Ministry of Education has increased control of employment policy for graduates from university and non-university tertiary teacher training institutions. Beforehand, this was ruled and managed by regional executive bodies and local education departments. The latter, according to Ministry of Education analysis, was one of the reasons for the artificial increase in teachers' employment in general (primary, secondary) schools. The teacher-student ratio in general schools now, in 2008/9, is around 1: 8.2, which is quite an unusual surplus over the number of teachers required. Five years ago, in 2003/4, the situation was rather better; the ratio then was 1:10.

The perception of the job has changed now; it is not, as some time ago, lifelong and unchanging employment. The temporary market is now an essential part of the economy. Continuing education in order to update knowledge and skills is responding to this market now as an essential part of the education sector. Companies are also interested in in-service training, i.e. training taking place in the workplace.

Vocational education is a system that can essentially help employment.

### **Unemployment among university and non-university PSE graduates**

The economically active population of Azerbaijan in 2008 was 4,318.2 thousand; and the unemployed comprised 262.2 thousand, that is 6.1%. At the same time there were only 44,481 registered unemployed (17% of the total unemployed or 1% of the economically active population) and only 2,109 of them (4.74% of all those registered and 0.8% of the total unemployed) received allowances. The amount of the allowance was around 42-45% of average wages.

According to official statistics, unemployment is decreasing year-by-year without exception. In 2003 there were 400.9 thousand unemployed within a total economically active population of 4,147.9 thousands, amounting to 9.7%. [15].

The areas of the labor force receiving most applications are health and social services, and the education sector. The best paid jobs are in mining (petrol-gas), the financial sector, real estate sector, and construction, in decreasing order.

The main paradox in the employment/unemployment problem is that many graduates of HEIs and other PSE institutions haven't got jobs and many organizations are looking for new, qualified employees! So, the main problem is the quality of PSE. As mentioned before, the gross graduation ratio in Azerbaijan is comparatively low, at the same time it is almost equal to the enrollment ratio. An absolute majority of students are graduating in the time assigned by the program; for instance, after 4 years on undergraduate programs leading to a bachelor

degree. It turns out that exams taken during study in many cases aren't playing their role of distinguishing one student from another. Of course, there are different institutions with well-designed programs, an examination-filtration system and a culture of quality in general. Many enterprises, particularly international companies, and other employers prefer, first of all, graduates from institutions with good quality and good reputations. Students' study at these few institutions is based on modern programs in related areas and, in addition, their graduates' computer skills and knowledge of English are high, they can work in teams and also demonstrate leadership skills.

### **Future developments in PSE, and recommendations**

- Maintaining diversity within the PSE system as a whole, within its various divisions and within separate institutions, requires adequate legislation within the country. All events and trends, including government decrees, international cooperation, and private sector involvement, show that PSE is becoming a more diverse system than in the distant or recent past.

- The small corridor joining the research-oriented HEI with the industry-business world is the so-called incubator, whose target is to set up small businesses with the application of scientific ideas and technologies, and successfully turn them into a company. Probably, the establishing of pre-incubators, however simple, is an interesting opportunity for vocational schools and non-university tertiary schools. The passageway, bigger than the incubator, between university and industry consists of techno-parks or science parks; spin-offs are children of these parents, i.e. universities and industry. University technology transfer offices, which can work on the patenting and licensing of inventions, are not yet established in Azerbaijan. These offices should also work on the development of research and problem-solving partnerships with industry. Connecting the efforts of businesses and industry with the research-technology activities of HEIs and, in some cases of small businesses, also with the specific activity of non-university PSE institutions, provides a basis for development. The existence of adequate legislation to motivate these types of partnerships is a necessity and it is a duty of government. The Bayh-Doyle Act in the USA and the TLO Law in Japan are brilliant examples of government policy towards the strengthening of the university-industry relationship. Reducing the gap between education-research and industry-business is a requirement of the modern knowledge economy.

- There exists no university in Azerbaijan which has the capacity to create real science-technology parks by itself, independently. This is a problem to be solved by a group of interested universities and would require real government support.

- The affiliation of vocational schools to related industry, agriculture and businesses, and establishing a dual system - theory in the schools and practical aspects in companies - can help; there was such experience in Soviet times.

- A three-sided partnership of private providers, government and labor market is vital for the development of PSE in general, particularly the non-university sector.

- Founding non-university tertiary schools, affiliated to HEIs and with the right to transfer credits, could undoubtedly raise the popularity of these schools.

- To receive PSE then becomes the responsibility of individuals, and delivering it becomes that of government and other providers. At the same time, the individual right to teach is not as well emphasized in Azerbaijani legislation as the right to receive an education. All PSE institutions, whether state or private, regional or urban, should be given the opportunity to educate students in diverse majors, on short and long training courses and, moreover, they should be encouraged and motivated.

- Public awareness of the main problems of PSE, the trends and threats, is also very important; in order to discuss them openly and press the government further to act in the right direction, society must first of all understand and assess the situation in PSE.

- A new stage of PSE requires the building of a new information system and an independent evaluation-accreditation organism.

- What to do to increase access to PSE, which is problematic in Azerbaijan? Increasing the role of the private education sector is a tangible response, this is just stating the obvious; giving PSE to the people who intend to receive it, even want to pay for it, is vital for human rights, for society, for government. The belief held by some officials that mass PSE is not important is a big misunderstanding, moreover a big mistake. Concerning how to finance it, there is no problem in answering: government will pay scholarships and other types of costs for the best applicants, taking into account only the results of centralized exams; others must be free in their actions – both in receiving and delivering education in their own way, and that is all! It will not increase state expenditure and it will increase access to PSE; it will help people to be more educated, more qualified.

One more way to increase access to PSE in Azerbaijan is to encourage HEIs to affiliate, or to establish, non-university tertiary schools with the right to transfer parts of credits to a higher level.

- Tight, centralized, administration “from the top”, seriously interferes with the dynamic development of HEIs, particularly in the artificial and muscular limitation of admissions and in the choice of study areas with artificial monopolies of “expensive” majors, essentially weakening and diminishing the competitive strength of even the best private institutions.

- Introducing management methods developed in the private sector into universities and lower PSE institutions and the incorporation of high-quality institutions can help immeasurably in raising the quality of education, in advance of industry and small and big businesses funding research and education centers.

- Corporate governance in the strategic and high level management of HEI consists, first of all, of the work of boards of trustees or boards of governance. Looking to the team-work of bright people instead of the authoritarian will and planning of one person; sharing power between the Board and CEO in strategy and tactics, in fund raising and in senior appointments, is a vital component of institutional development in the pressing environment of worldwide competition. Corporate governance of PSE isn’t positioned in Azerbaijan except in a few insignificant attempts and cases.

- Independent accreditation agencies, not controlled by the government, are believed to achieve better results in evaluating quality and HEIs. It will also be politically more correct as a process uninfluenced by the prejudice of officials directed in advance to make this or that decision.

- Financial assistance (scholarships, loans, credits) by government agencies and state policy encouraging expansion of the private sector, and thus private expenditure, could contribute to increasing access to vocational and tertiary education, as well as to enhancing their quality.

- The current mechanism of the public financing of PSE institutions used in Azerbaijan doesn’t serve to encourage the competitiveness of institutions; to tell the truth, it impedes any development in this direction. Financing educational institutions indirectly through the choice/attitudes of successful applicants could be to the benefit of all individual and institutional participants, including private PSE institutions, those drivers of innovations and growth in the education sector. Government agencies such as the Ministries of Finance and Education understand this and their willingness to advance it, of course with the support of the highest authorities, is among the most pleasing aspects nowadays.

- The exemption of educational institutions from VAT and profit taxes is crucial. Now, when the government appreciates the role and needs of the private education sector and shows real interest in supporting them via tuition fees for admitted students, the old taxation policy

obviously contradicts this process. In addition, the application of tax exemptions to companies, corporations and individuals who may sponsor educational institutions is vital for the development of PSE,

- The competitive financing of partnership programs between foreign and Azerbaijani PSE institutions must be introduced now as an essential step forward in strengthening the competitive power of the PSE sector in the country.

- The policy of merging universities, as well as the merging of institutions of the Academy of Sciences with research oriented universities, peculiar to post-socialist countries, and the competition-based financing of scientific projects, have become the chief tools of reform in education, research and development. Just the reverse process is going on in Azerbaijan where, within a short period, many new small size and PSE institutions, affiliated mainly to ministries and other state agencies, have been established. Making PSE institutions stronger and more effective requires another, different, approach from government.

- The present, archaic system of centralized approval of scientific research degrees by the Higher Attestation Committee must be abolished, as has been the case in most post-socialist countries; awarding advanced degrees is the job and the responsibility of the HEI itself.

- It is important to define approximately in which fields and how many specialists will be required in the short and medium terms for the country; for instance, taking into account the strategy of the development of the regions, the dynamics of opening new work places and the employment capacity of different sectors. At the same time, all the above circumstances must not be considered as absolute; the knowledge economy is full of innovations, the place and the role of different fields change. In addition, we live in a time in which a non-stop flow of specialists from one place to another (including brain circulation, brain-drain and brain-gain) is quite easy and actually happens; the specialists trained in one country can work and, in general, do work, in other parts of the world.



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# Annexure

(From the State Statistical Committee of the Republic of Azerbaijan)

## 1. Population size (at the beginning of year; thsd person)<sup>1)</sup>

Population	2000	2004	2005	2006	2007	2008	2009
<b>Population size</b>							
Total	8032.8	8349	8447.3	8553.0	8665.9	8779.8	8896.9
urban	4116.4	4403.6	4477.6	4565.7	4636.6	4733.6	4818.3
rural	3916.4	3945.4	3969.7	3987.3	4029.3	4046.2	4078.6
As % of total population:							
urban	51.2	52.7	53.0	53.4	53.5	53.9	54.2
rural	48.8	47.3	47.0	46.6	46.5	46.1	45.8
From total number of population:							
male	3922.8	4081.2	4130.9	4184.0	4241.2	4298.8	4358.3
female	4110.0	4267.8	4316.4	4369.0	4424.7	4481.0	4538.6
As % of total population:							
male	48.8	48.9	48.9	48.9	48.9	49.0	49.0
female	51.2	51.1	51.1	51.1	51.1	51.0	51.0

1) Data for 2000-2009 were calculated based on preliminary results of the population census 2009.

## 2. Financial expenditures of the state budget of Azerbaijan Republic in 2008

	Million AZN (manat)	In percent to GDP
Expenditures - total of which:	10762.7	28.3
social-cultural activities of which:	2312.6	6.1
education	979.7	2.6
in percent to expenditures of the state budget	9.1	-
Culture and art. mass media	118.3	0.3
in percent to expenditures of the state budget	1.1	-
health care	346.3	0.9
in percent to expenditures of the state budget	3.2	-
social protection	825.3	2.1
in percent to expenditures of the state budget	7.7	-
social security	21.1	0.1
in percent to expenditures of the state budget	0.2	-
science	62.1	0.2
in percent to expenditures of the state budget	0.6	-

## 3. Number of students by types of education (at the beginning of academic year; person)

	2000 - 2001	2003- 2004	2004- 2005	2005 - 2006	2006- 2007	2007- 2008	2008- 2009
Having an education - total	2034743	2046145	1999999	1957981	1909641	1861989	1803947
including:							
general educational institutions <sup>1)</sup>	1692812	1691731	1636872	1588364	1539351	1492017	1431515
vocational schools, vocational lyceums and vocational centres <sup>1)</sup>	172944	171677	171563	172189	173813	174455	175184
specialized secondary educational institutions	42702	53832	55994	58070	57027	53621	52616
higher institutions, post-graduate study and doctorate study	126285	128905	135570	139358	139450	141896	144632

<sup>1)</sup> At the end of year

#### 4. Main indicators of post-secondary education (at the beginning of school year)

	2000	2003	2004	2005	2006	2007	2008
Number of vocational schools and vocational lyceums(at the end of year)	110	110	110	107	107	107	108
Number of pupils in vocational schools and vocational lyceums, person	22944	21677	21563	22189	23813	24455	25184
including number of girls, person	8420	6622	6560	6513	6825	7242	7645
Number of specialized secondary educational institutions - total	71	60	59	60	60	60	60
state	68	55	55	56	56	56	57
non-state	3	5	4	4	4	4	3
Number of students of specialized secondary educational institutions - total, person	42612	53694	55794	57896	56872	53489	52579
including:							
state	41173	52256	54173	55028	53745	51482	51596
non-state	1439	1438	1621	2868	3127	2007	983
Number of women in specialized secondary educational institutions - total, person	29759	37337	38884	40415	40197	37629	36276
including:							
state	28388	36139	37535	38049	37619	35920	35457
non-state	1371	1198	1349	2366	2578	1709	819
Number of students of specialized secondary educational institutions per 10000 population	55	68	69	71	69	64	63
Number of students admitted to secondary educational institutions - total, person	14823	16477	16986	17330	15157	13679	15681
including:							
state	14342	15856	16329	16079	14539	13679	15681
non-state	481	621	657	1251	618	-	-
Number of graduates of specialized secondary educational institutions -total, person	11309	15100	14409	15796	16385	17007	17278
including:							
state	10846	14587	14025	15302	15672	15993	16286
non-state	463	513	384	494	713	1014	992
Number of graduates of specialized secondary educational institutions per 10000 population	15	19	18	20	20	21	21
Number of higher educational institutions - total	47	47	47	47	47	48	48
State <sup>1)</sup>	29	32	32	32	33	34	34
non-state	18	15	15	15	14	14	14
Number of students of higher educational institutions - total, person	119683	121535	127248	129948	129141	130430	136587
including:							
state	91019	104009	106020	105997	106882	108238	115994
non-state	28664	17526	21228	23951	22259	22192	20593
Number of women of higher educational institutions - total, person	49858	56099	59755	62022	61265	61172	62394
including:							
state	38497	48497	50617	50871	51363	50971	52445
non-state	11361	7602	9138	11151	9902	10201	9949
Number of students of higher educational institutions per 10000 population	154	153	159	160	157	157	162
Number of students admitted to higher educational institutions:							
bachelor - total, person	26403	25438	26988	28747	23873	25846	28765
state	20498	21998	21493	23314	21158	23139	25622
non-state	5905	3440	5495	5433	2715	2707	3143
magister - total, person	2752	4470	5455	3236	2757	3404	3265
including:							
state	2417	3957	4961	3103	2648	3190	3064

non-state	335	513	494	133	109	214	201
Number of graduates of higher educational institutions - total, person	24488	28460	31232	32508	28141	31279	32580
including:							
state	19631	24343	26197	27784	23999	26875	26593
non-state	4857	4117	5035	4724	4142	4404	5987
From total number of graduates received diploma:							
bachelor - total, person	22582	25756	28076	28467	23351	27287	29764
including:							
state	17822	21851	23329	24006	19591	23069	23887
non-state	4760	3905	4747	4461	3760	4218	5877
magister - total, person	1906	2704	3156	4041	4790	3992	2816
including:							
state	1809	2492	2868	3778	4408	3806	2706
non-state	97	212	288	263	382	186	110
Number of graduates of higher educational institutions per 10000 population	32	36	39	40	34	38	39

<sup>1)</sup>Including specialized higher educational schools.

#### 5. Admission to vocational schools and vocational lyceums (at the beginning of the year; person)

	Admitted total
<b>2001</b>	12946
<b>2004</b>	12741
<b>2005</b>	12560
<b>2006</b>	12935
<b>2007</b>	14590
<b>2008</b>	14718
<b>2009</b>	13761
Day vocational schools and vocational lyceums	11085
of which:	
divisions on the base of completed secondary education	4075
divisions on the base of general secondary education	4920
groups not giving completed secondary education to the youth	2090
Vocational schools in recovery-labor institutions of the Ministry of Justice	1035
Special vocational schools	7
Training institutions on the paid base	1634

#### 6. Graduates of vocational schools and vocational lyceums (at the beginning of the year; person)

	Total qualified staff (trained)
<b>2001</b>	12052
<b>2004</b>	10654
<b>2005</b>	11091
<b>2006</b>	11095
<b>2007</b>	12862
<b>2008</b>	13156
<b>2009</b>	11927
Day vocational schools and vocational lyceums	9882
of which:	
divisions on the base of completed secondary education	3970
divisions on the base of general secondary education	4035

groups not giving completed secondary education to the youth	1877
Vocational schools in recovery-labor institutions of the Ministry of Justice	838
Special vocational schools	7
Training institutions on the paid base	1200

#### 7. State and non-state specialized secondary educational institutions (at the beginning of school year)

	2000 - 2001	2003- 2004	2004- 2005	2005 - 2006	2006- 2007	2007- 2008	2008- 2009
Number of specialized secondary educational institutions	71	60	59	60	60	60	60
Number of students - total, person	42612	53694	55794	57896	56872	53489	52579
including by type of attendance:							
day	34332	41834	44453	45552	43721	40725	39892
correspondence	8280	11860	11341	12344	13151	12764	12687
Number of students per 10000 population	55	68	69	71	69	64	63
Number of students admitted to specialized secondary educational institutions - total, person	14823	16477	16986	17330	15157	13679	15681
including by type of attendance:							
day	12351	14316	15098	14582	12662	11878	13274
correspondence	2472	2161	1888	2748	2495	1801	2407

#### 8. Number of enrollments of state and non-state specialized secondary educational institutions by trends of training (at the beginning of school year)

	2000 - 2001	2003- 2004	2004- 2005	2005 - 2006	2006- 2007	2007 - 2008	2008- 2009
Number of students - total, person	42612	53694	55794	57896	56872	53489	52579
including trends of training:							
natural sciences	-	78	126	229	417	605	829
humanitar and social sciences	16613	20688	22364	24192	22937	21086	20733
education	10485	17817	18764	19357	20086	18399	17096
economics and management	7534	6975	6573	6190	5919	5875	5812
natural and technical sciences	355	270	291	381	335	276	326
technical sciences	7145	7389	7338	7301	6980	6951	7502
agriculture and fisheries	480	477	325	226	166	243	208
ecology and use of nature	-	-	13	20	32	54	73

#### 9. Graduates of state and non-state specialized secondary educational institutions by trends of training

	2000	2003	2004	2005	2006	2007	2008
Number of graduates of specialized secondary educational institutions - total, person	11309	15100	14409	15796	16385	17007	17278
including by trends of training:							
natural sciences	-	-	-	42	36	85	161
humanitar and social sciences	5318	5911	5796	6227	7433	7652	7084
education	2248	4348	4243	4751	4344	5330	6095
economics and management	1995	2367	2257	2394	2135	1919	1932
natural and technical sciences	196	184	118	123	137	142	101
technical sciences	1487	2207	1845	2130	2239	1823	1833
agriculture and fisheries	65	83	150	129	61	49	66
ecology and use of nature	-	-	-	-	-	7	6

**10. Number of teaching staff of state and non-state specialized secondary educational institutions (at the beginning of school year, person)**

	2000 - 2001	2003- 2004	2004- 2005	2005 - 2006	2006- 2007	2007- 2008	2008- 2009
Number of teaching staff (key staff) - total	5461	6504	7028	6813	7049	6994	7003
including:							
having scientific degree:							
doctor of science	6	7	17	9	8	9	3
candidate of science	128	149	145	150	185	158	132
academic rank:							
professor	12	7	8	6	11	8	8
senior lecturer	6	25	29	29	60	32	29
Total number of women teachers in specialized secondary educational institutions	3505	4463	4797	4611	4936	5116	5194

**11. State and non-state higher educational institutions (at the beginning of school year)**

	2000 - 2001	2003- 2004	2004- 2005	2005 - 2006	2006- 2007	2007- 2008	2008- 2009
Number of higher educational institutions <sup>1)</sup>	47	47	47	47	47	48	48
Number of students - total, person	119683	121535	127248	129948	129141	130430	136587
including by type of attendance:							
day	96226	94238	95099	96987	98554	100760	107381
correspondence <sup>2)</sup>	23457	27297	32149	32961	30587	29670	29206
Number of students per 10000 population	154	153	159	160	157	157	162
Number of students admitted to higher educational institutions:							
bachelor - total, person	26403	25438	26988	28747	23873	25846	28765
including by type of attendance:							
day	22455	20903	22221	24285	20325	22196	25164
correspondence <sup>3)</sup>	3948	4535	4767	4462	3548	3650	3601
magister - total, person	2752	4470	5455	3236	2757	3404	3265
including by type of attendance:							
day	2752	3468	3947	2339	2062	2566	2413
correspondence	-	1002	1508	897	695	838	852

<sup>1)</sup> Including specialized higher educational schools;

<sup>2)</sup> Including students of the evening section.

<sup>3)</sup> Including admission to evening section.

**12. Number of enrolments of state and non-state higher educational institutions by trends of training (at the beginning of school year)**

	2000 - 2001	2003- 2004	2004- 2005	2005 - 2006	2006- 2007	2007- 2008	2008- 2009
Number of students - total, person	119683	121535	127248	129948	129141	130430	136587
including trends of training:							
natural sciences	11083	11305	11682	11840	11780	11884	11837
humanitar and social sciences	44395	43331	46601	47319	47064	47392	48754
education	11948	16627	17263	17025	15654	15262	14710
economics and management	23056	24053	27080	29603	29603	30160	33167
natural and technical sciences	1803	2203	1755	2054	2154	2193	2240
technical sciences	24899	22139	21050	20272	20908	21477	23471
agriculture and fisheries	1574	904	810	799	852	908	1070
ecology and use of nature	925	973	1007	1036	1126	1154	1338

### 13. Main indicators of scientific research

	2000	2001	2002	2003	2004	2005	2006	2007	2008
Number of organizations carried out research and development works	137	137	131	138	139	146	145	146	146
Employees engaged in research and development works, person	15809	15929	16019	17190	17712	18164	17973	18079	17942
including women, person	7981	8335	8371	8882	9190	9395	9339	9236	9249
of them:									
doctors of science	678	644	635	656	668	705	708	735	750
including women, person	83	81	84	89	99	101	110	115	117
candidates of science	3343	3224	3226	3295	3234	3322	3258	3277	3360
including women, person	1170	1155	1198	1229	1181	1228	1246	1251	1340
Besides, number of research and educational employees of higher educational institutions which are not on the staff of scientific research subsector, but carrying of out research and development works, person	10561	11004	11011	11599	11553	11583	11591	11901	11882
including women, person	4098	4305	4530	4966	5337	5320	5344	5595	5462
of them:									
doctors of science	834	838	835	874	925	956	988	1065	1074
including women, person	69	74	74	85	89	105	116	135	133
candidates of science	5037	5017	5005	5088	5199	5269	5386	5448	5404
including women, person	1402	1469	1420	1529	1693	1782	1816	2003	2025
Number of academicians - total	31	60	60	61	60	58	57	68	65
including women, person	1	2	2	2	2	2	2	3	3
Number of corresponding members - total	48	117	113	110	107	102	100	117	113
including women, person	3	10	10	10	10	9	9	12	12
Number of organizations with postgraduate courses	83	84	83	86	88	94	96	96	94
Number of post-graduate students, person	963	982	1059	1178	1318	1479	1705	1681	1636
including women, person	338	308	315	320	361	411	484	565	676
Admission to post-graduate study, person	367	292	303	398	470	503	550	452	455
Graduation of post-graduate study, person	321	244	202	260	320	317	340	431	503
including those defended a dissertation	35	19	14	27	31	28	22	31	44
Number of organizations with courses of doctor's degree	21	16	17	19	20	21	19	24	31
Number of persons working for doctor's degree, person	47	40	58	57	68	80	80	83	93
including women, person	7	13	13	12	15	17	22	17	20
Admission to courses of doctor's degree, person	9	17	18	14	14	18	17	19	22
Graduates of courses of doctor's degree, person	22	7	7	15	6	8	11	20	25
including those defended a dissertation	2	1	-	3	2	4	6	7	3
Allocated funds from state budget for science:									
Million AZN manat	9.1	9.1	11.1	16.1	20	28.1	32	43.9	62.1
in percent to GDP	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
in percent to expenditures of state budget	1.1	1.1	1.1	1.1	1.1	1.1	0.8	0.7	0.6
Domestic expenditures for research and development works:									
million manat	15.1	18.1	18.1	23.1	25.1	27.1	32.2	48.2	62.3
in percent to GDP	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2
Fixed assets for research works, million manat	54.9	70.6	67.5	79.7	79.7	79.9	84.9	84.9	85.1



#### 14. Main indicators of post-graduate education (person)

	2000	2001	2002	2003	2004	2005	2006	2007	2008
Number of post-graduate students - total	963	982	1059	1178	1318	1479	1705	1681	1636
<b>including:</b>									
scientific institutions	479	519	540	630	736	839	956	941	885
with giving up work	290	348	399	469	574	667	753	728	686
higher educational institutions	484	463	519	548	582	640	749	740	751
with giving up work	280	284	344	352	408	482	596	571	551
Admission to post-graduate study - total	367	292	303	398	470	503	550	452	455
<b>including:</b>									
scientific institutions	165	168	176	238	281	295	329	259	249
with giving up work	117	126	151	188	231	251	275	211	204
higher educational institutions	202	124	127	160	189	208	221	193	206
with giving up work	139	95	92	121	159	180	181	144	136
Graduates of post-graduates courses - total	321	244	202	260	320	317	340	431	503
<b>including:</b>									
scientific institutions	183	114	139	135	164	175	211	261	287
with giving up work	94	59	89	104	119	138	191	215	231
higher educational institutions	138	130	63	125	156	142	129	170	216
with giving up work	48	74	27	98	92	100	97	136	169
Persons defended thesis from total number of graduates - total	35	19	14	27	31	28	22	31	44
<b>including:</b>									
scientific institutions	15	10	11	10	14	12	13	14	22
with giving up work	7	2	9	6	9	9	11	13	16
higher educational institutions	20	9	3	17	17	16	9	17	22
with giving up work	-	4	2	3	6	11	5	12	18

#### 15. Number of post-graduate students by ministries and departments (person)

	2000	2001	2002	2003	2004	2005	2006	2007	2008
Total	963	982	1059	1178	1318	1479	1705	1681	1636
<b>including by ministries and departments:</b>									
The Executive Committee the President's Office of the Republic of Azerbaijan	32	33	36	29	20	22	21	25	26
National Academy of Sciences	297	326	345	424	506	591	670	629	608
Ministry of Education	406	393	444	461	485	494	561	557	555
Ministry of Health	95	86	90	84	106	103	136	117	98
Ministry of Agriculture	37	42	35	46	59	74	87	96	95
Melioration and Water Farm Open Joint Stock Company	22	24	22	24	22	19	26	32	32
Ministry of Fuld and Energy	-	36	39	34	36	35	38	39	34
Ministry of Economic Development	9	19	22	23	32	40	45	38	33
Ministry of Labour and Social Protection of Population	4	3	5	7	9	9	10	10	10
Ministry of Justice	7	7	6	5	1	2	3	3	2
Other ministries and departments	54	13	15	41	42	90	108	135	143