UNITED NATIONS ECONOMIC COMMISSION FOR EUROPE

TOWARDS A KNOWLEDGE-BASED ECONOMY

AZERBAIJAN

Country Readiness Assessment Report

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COUNTRY READINESS ASSESSMENT REPORT

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FOREWORD

The last decades of the 20th century have represented a turning point in the global development process. It is knowledge that has become the engine of the social, economic and cultural development in the today's world. Knowledge-intensive economic activities are now a factor of production of strategic importance in the leading countries. They have also become the main indicator of the level of development and the readiness of every country for a further economic and cultural growth in the 21st century. Taking into consideration all these factors, the United Nations Economic Commission for Europe has launched an initiative of monitoring and analyzing the development of the knowledge-based economy in all the European countries in transition.

The major goal of this initiative is to stimulate the exchange of national experiences, to identify best practices and to promote region-wide and global-wide cooperation of the UNECE member States, which would accelerate the development of a knowledge-based economy in the countries in transition. It envisages the preparation of country assessment reports on the biennium basis by national experts, nominated by the Governments, the creation of a High-Level Task Force on the Knowledge-Based Economy, which will consider the reports and provide policy advice and recommendations to the participating countries, and the development of progress measurements and indicators, policy guidelines and tools to assist countries in overcoming obstacles to the development of a knowledge-based economy.

We hope that the country assessment reports, showing a detailed level of the countries' potential and providing information on various approaches and solutions, will help policy-makers to take strategic decisions with regards to the challenges facing them in the development of institutions, information and innovation systems, human resources development and other areas crucial for the development of a knowledge-based economy.

Brigita Schmőgnerová

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PREFACE

The industrial revolution of the 19th century and the scientific revolution of the 20th century have prepared the conditions for the rise of the knowledge-based economy. Economic activities associated with the production and utilization of information and knowledge have become an engine of economic growth in the developed market economies, increasingly transforming all the other dimensions of development and the entire societal ***modus vivendi*** and ***modus operanti*** of the humanity.

What do we mean by "the knowledge-based economy"?

It is not just the digital economy, which incorporates the production and use of computers and telecommunication equipment. It is not quite the networked economy, which incorporates the telecommunication and networking growth during the last decades and its impact on human progress.

The knowledge-based economy is a much complex and broader phenomenon. There are different dimensions and aspects of the knowledge-based economy:

1. The knowledge-based economy has a very powerful technological driving force – a rapid growth of information and telecommunication technologies (ICT). Every three – four year there appears a new generation of ICT. Today, the ICT companies are among the largest corporations. The ICT sector is among the fastest growing economic sectors.

2. Telecommunication and networking, stimulated by a rapid growth of ICTs, have penetrated all the spheres of human activity, forcing them to work into an absolutely new mode and creating new spheres. The information society has become a reality.

3. Knowledge, based on information and supported by cultural and spiritual values, has become an independent force and the most decisive factor of social, economic, technological and cultural transformation.

4. The knowledge-based economy has allowed a quick integration of the enormous intellectual resources of economies in transition into the European intellectual pool, stimulating the development of the former countries. Every country can benefit from developing a knowledge-based economy to become a more equal participant in the global development process.

5. The emerging knowledge-based economy has been affecting other areas of societal activity in every country, including institutional and innovation system, human resources development and etc. and visa versa. The knowledge-based economy has become an engine of progress in every country. If a country is developed, it has a developed knowledge-based economy, if a country is lagging behind, a knowledge-based economy constitutes just a small fraction of its economy.

The report below was prepared by a national expert, nominated by the Government, and represents an overview of the present situation and an assessment of the emerging trends in all the major areas, constituting the foundation of the knowledge-based economy, such as policy and policy instruments, institutional regime, ICT infrastructure, information system, national innovation capacities and capabilities.

The report was published by the Coordinating Unit for Operational activities under the guidance of Ms. Larissa Kapitsa with assistance of Ms. Tatiana Apatenko and Mr. Mitja Jarh.

Introduction

Information communication technology (ICT) is an important tool that can positively influence the development of a society. It influences State bodies and civil society institutions, economic/business and social sectors, as well as science, education, culture and people's every day lives. Many well-developed and developing countries have derived great benefits from ICT and there is no doubt that wide application of ICT in society is a way leading to the future of human civilization.

World experience clearly shows that broad usage of ICT assists a country's overall socio-economic development and can provide an effective means of reducing poverty. It is therefore crucial for countries to have a national ICT strategy and action plan in order to use country's potential for enhancing development. It is particularly important for countries such as Azerbaijan that are undergoing a socio-economic transition and wishes to fully integrate into the world community.

Transition to an information society, globalization and integration into the world community are among priorities of a number of international organizations where Azerbaijan is a member state, namely the United Nations and the Council of Europe. Creating the right environment for transition into information society is stated to go in line with the policy of the Government of Azerbaijan, and the development of a National Strategy on ICT is an important first step in this direction.

Enhancing of information flows is a complex process, which has a number of scientific, technical, technological, economic, sociological and political aspects. It is essential for the successful implementation of this process to utilize the required resources (human, technical, software, financial, administrative and political) for coordination and regulation of the activities to be carried out, and to establish realistic operational targets and priorities. Adopted a national strategy for the development and use of ICT in Azerbaijan include overall principles and priorities, specific operational targets.

1. National Strategy and Action Plan

1.1. National Coordination of the ICT

Taking into account insufficient coordination of the processes of information society building in the Republic, on the one hand, intensity of the processes of formation of the sole world information space, deepening of the processes of information and economic integration of the regions, countries and people and necessity of the Republic to participate in these processes, on the other hand, Azerbaijan Government jointly with UNDP started on 7 February 2002 the project "National Information Communication Technology Strategy for development and its initial implementation".

The executive of the project is the State Students Admission Commission - organization with great experience in application of ICT to mass processes, in cooperation with international organizations and the Chairwoman of the Commission is the National Coordinator of the Project.

1.2. The Key Points of the National ICT Strategy

The aim of the Strategy:

Via wide application of information-communication technologies promote democracy and build information society in the country

Main tasks:

- Creating and developing the legal base of an information society;
- Developing human factors in the society, providing favourable conditions for high-quality education and medical services;
- Creating a favourable environment providing human rights and social institutions for the free collection, distribution and use of information;
- Realizing effective, transparent and controlled State regulation and local government, building e-government, forming and developing e-commerce;
- Strengthening the economic, social and intellectual potential of the country, building a competitive economy, creating and developing the information and knowledge market;
- Digitally preserving the historic, literary and cultural heritage of the nation and information about the world community;
- Forming and developing the information and communication infrastructure of the society, expanding information and communication services;
- Providing national information security;
- Integrating the country into the global e-information space; and
- Introducing and developing new information and communication technologies, creating national software products, developing science-intensive production (ICT industries), eliminating the "digital divide".

Priorities:

- Provision of information needs of the citizens, development of the individual, promotion of the intellectual potential of the country.
- Strengthening of economic potential of the country through introduction of information-communication technologies.
- Digital preservation and promotion of the national historic, literary and cultural heritage of the people.

Main directions:

- Preparation of national ICT human resources and provision of minimum level of ICT-literacy.
- Development of telecommunications industry.
- Formation and development of e-government.
- Creation of the normative-legal base to support informatization.
- Building and development of the e-economy.
- Formation and development of national information resources.
- Strengthening scientific, technical and production potential in information and communication technologies.
- Provision of national information security and personal data protection.

National plan of Actions will be prepared for the realization of the National Strategy. Within the framework of this plan by each direction of the activity, plans of actions – National ICT-Programs will be developed, and also works will be carried out via projects. Success of realization of the National Strategy mostly depends on the correct organization of the management. Public monitoring is of a great importance.

Project of the National ICT-strategy on 2003-2012 was adopted by the President of the Republic of Azerbaijan with the special Decree (see Annex III).

1.3. Action Plan and Policy Instruments

The preparation of a NICTS reflects the Government's interest in the usage of ICT to broaden the implementation of all the necessary aspects that such a strategy entails. The strategy will take into account society's requirements, advanced global experience and facilitate Azerbaijan's integration into the world community. The strategy's objectives include the following:

- To assist the country's democratic development;
- To form a unified information zone in the country;
- To provide the country's information security;
- To reinforce the economic, social and intellectual potential;
- To create the required organizational, technological and legal environment;
- To create equal opportunities for all sectors irrespective of ownership forms;
- To fully integrate the country to the world community; and
- To ensure establishing the favorable conditions for transition to an information-intensive civil society by 2013.

Projects included within the 10-year strategy framework include:

- Creation and development of the legal basis with regard to the enhancement of information structures and adoption of State standards.
- Encouragement of the application of science so as to ensure the broader usage of ICT.
- Creation of a favorable environment for setting up small and medium-sized enterprises, which produce internationally competitive products and services.
- Enhancement of an information infrastructure in education, monitoring education and distance learning.
- Development of Internet and information services.
- Wider use of the Azerbaijan language and alphabet and creation of national information resources.
- Establishment and development of regional information centers.

The overall main objective of the project is to create the necessary conditions for accelerating the transition to an information society. The following activities are envisaged:

- Resolving the structure, mechanism of administration and monitoring of the information enhancement process.
- Establishing the legal base to enhance the ICT potential.
- Assessing the country's electronic readiness.
- Selecting the priority areas for implementation (ICT) and resolving any outstanding issues affecting their implementation.
- Development and implementation of training programs for State administration officials.
- Resolving Azeri language script related problems and adopting respective standards.
- Establishing regional information centers.
- Establishing international cooperation, and ensuring local experts' participation in international forums and activities aimed at the involvement of international organizations into the realization of the strategy will be ongoing.

In order to implement the strategy a scientific-technical counsel, experts' counsel, monitoring counsel and public supervisory counsel need to be established as affiliates to the State Agency.

The Government of Azerbaijan has a number of prospective plans and proposals to expand the use of ICT in the State sector, for example in the areas of information security, other database/registration systems, and the non-commercial use of the Internet for academic institutions.

2. The Institutional Regime and Coordination of Activities

2.1. State Institutional Structure Improving via ICT

The development of democracy and the strengthening of its role in the creation of an information society is a multi-faceted task. Key elements include the creation and development of the requisite legal environment, the development of mechanisms for implementing normative acts and the fostering of public awareness of the role of personal and public group involvement in the process of advancing democratic reforms.

More than 30 parties participated in the Parliamentary Elections in 2000, a demonstration of wide public engagement in the political sphere. State Automated System “Elections” is created and in 2000 during the elections to Milli Majlis (Azerbaijan Parliament) it was used for the first time. System of national passports of the population of Azerbaijan is carried out. Within the framework of the reforms of the courts in the Republic, ICT was applied in selection of the judges, aptitude of the judges were determined by the tests. ICT is used for the testing attorneys, state employees.

Poverty reduction is fundamental for human development, and Azerbaijan has declared it to be a national priority for the next decade. The National Programme for Poverty Reduction Strategy entails fundamental reforms that include stimulating an expansion of political participation, securing the accountability and transparency of government, stimulating the free flow of information, and securing strong positions for community groups and NGOs in developing political directions and adopting policy decisions. In this context, the development of forms of self-organization and self-administration such as NGOs, professional associations and labor unions will promote the necessary environment for poverty alleviation. In addition to promoting economic growth, overcoming poverty in Azerbaijan requires the reduction of hardships, including addressing limitations to having a healthy lifestyle, access to information, education, participation in public life, individual opportunities to defend one’s rights to development and protection from all forms of discrimination and risks.

The local administrative structures have an important role to play in solving the problem of poverty. The Law "On Local Self-Governance" adopted in 1999 is aimed at enlarging the involvement of locally elected bodies and citizens in addressing local issues, including various manifestations of poverty. To regulate the activities of the newly formed local administrative bodies, the Parliament adopted the Laws "On Municipal Service" and "On the Base of Funding Municipalities." More than 2,700 Municipal Councils have been established throughout Azerbaijan, excluding the territories occupied by Armenia, through the Municipal Elections held in 1999. The National Parliament has prepared a special program for municipality development through the year 2015. According to this program special typical information systems for local administrative structures will be prepared.

2.2. Institutional Structure on ICT area

The executive of the project “National Information Communication Technology Strategy for development and its initial implementation” is the State Students Admission Commission - organization with great experience in application of ICT to mass processes, in cooperation with international organizations and the Chairwoman of the Commission is the National Coordinator of the Project.

In the framework of the NICTS Project six Working Groups have been set up: National Strategy Group; Normative-Legal Base Group; Usage of the Azerbaijani Language in the Information Space; Projects on ICT; Regional Information Centres; Internet Services.

These groups were to identify the national strategy for the ICT sector, the main laws on ICT for e-documents, e-signature and e-commerce, the creation of fonts based on the Azeri language, software, a dictionary, etc. There is Council of Sector's Coordinators from all Ministries and Committees of Azerbaijan working within the NICTS project.

Parliament	Banks
Milli Mejlis	National Bank
Ministries and State Committies	Azerbaijan International Bank
Ministry of Economic Development	
Ministry of Foreign Affairs	Others
Ministry of Communication	National Academy of Sciences
State Customs Committee	State Oil Company of Azerbaijan Republic
Ministry of Youth, Sport and Tourism	Central Archive Department
State Statistics Committee	State Railway Department
Ministry of Finance	Azerbaijan Airlines State Concern
Ministry of Taxes	Counting Chamber of Azerbaijan Republic
Ministry of Agriculture	
Ministry of Culture	
Ministry of Justice	
Ministry of Internal Affairs	
Ministry of Education	
State Committee on Women's Problems	
Ministry of Labor and Social Protection of Population	
Ministry of Health	
Ministry of Ecology and Natural Resources	
State Committee of Land and Map Drawing	

2.3. Telecommunications Policy

According to the decision of the Cabinet of Ministers No. 143, dated June 04, 1994, the Ministry of Communications (MOC) was empowered to manage and coordinate the broadcasting of all State TV and radio programmes, telecommunications and postal communications. The Ministry is also responsible for ensuring the fulfilment of growing demand by providing the means for uninterrupted communications services. The Ministry was thus a regulator as well as a service provider.

The Ministry would ensure:

- equality of all physical and legal entities in this sphere of activity and service procurement;
- protection of free competition, limitation of unfair competition;
- provision of free access to and distribution of information on all subjects; and
- separation of the subject of regulation from the economic practicalities in this sphere of activity.

Azerbaijan is a member of the International Telecommunications Union (ITU) and participates in various international forums. Not yet having become a member of the World Trade Organization (WTO), it has not ratified the Agreement on Basic Telecommunications Services. The Ministry is preparing to join the European Conference on Postal and Telecommunication Administration (CEPT), which enable Azerbaijan to establish bilateral relations with legislative organizations in Europe.

The Law of Azerbaijan "On Communications" dated 20 June, 1997 defined the organizational, economic and legal basis for activities in the field of communications. An Inter-Ministerial Tariff Commission was set up, headed by the Minister of Economic Development to provide a 'level playing field' for all operators. The Commission had powers to control tariffs, manage frequencies and impose penalties on defaulters.

According to the decision of the Cabinet of Ministers No. 138, dated 12 December 1997 "On Rules for Protecting the Methods and Equipment for Communications in the Republic of Azerbaijan", communication equipment needed certification prior to installation.

The licensing of services such as international, inter-city and local cellular communications, paging, radio-trunk, cable TV, and express postal services, was regulated by the Ministry of Communications. It was also responsible for setting up joint ventures in telecommunications. Aztelecom was the State monopoly provider for long distance and international calls, including leasing of inter-city and international channels. It offered services such as, local, inter-city and international telephony, data transmission, telegraph, telex, TV and radio broadcasting, cable transmissions, leasing of frequencies, Internet access and a telephone pay-card system. Three operators were providing domestic telephone services - the AzTelecom, Azeurotel, and Ultel. In mobile telephony, two companies provided the services, namely Azerbaijan – Bakcell and Azercell.

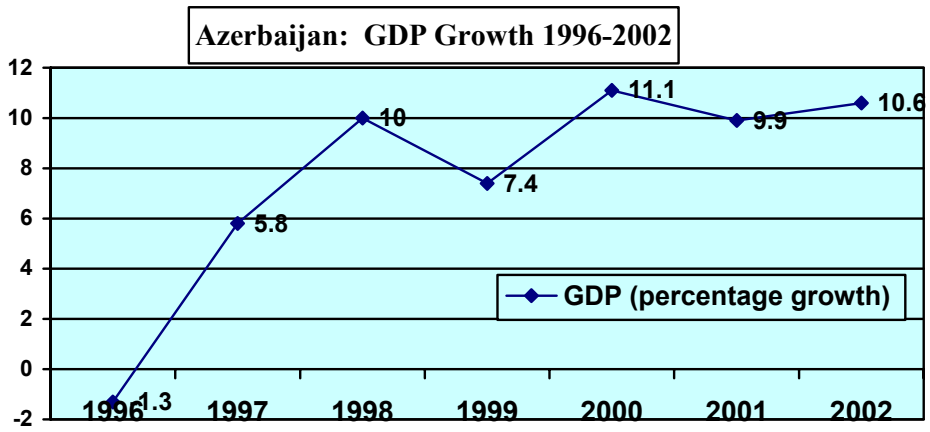
Internet services in Azerbaijan were provided by 13 companies. These included Adanet, Artel, Azcom, Azerin, Azeronline, Azeurotel, Azinternet, Azintex, Aznetcard, Bakinternet, Baknet, Intrans and Sinam-Invest.

A number of telecommunication companies were to be privatized, according to the decree of the President of 21 March 2001. These included, AzTeleCom and the Baku city telephone system, Tele Radio, Azermetbuatyayim, ground satellite stations and the State-owned share in authorized capital of joint ventures, the co-founder of which was the Ministry of Communications of Azerbaijan. It was understood that over 51 percent of Aztelecom's shares would be put up for privatization.

3. Present Situation and Trends in the Country's Information System

3.1. General Statistics on Azerbaijan

Population (January 2002)	8200000
Area (sq.km^2)	86,600
US$ Per Capita GDP (2002)	756.3
GDP Growth (2002/2001)	10.6%
International Reserves , US$ in million (2001)	679.6
Currency Units, Manat (September 2002)	1 US $ = 4894.2 Manat
GDP Distribution (2002)	
Agriculture	14.2%
Industry	34.9%
Services	50.9%
Merchandise Trade	
Total, US$ billion (for 11 months of 2002)	3.3
Exports (2001), US$ billion	1.8
Imports (2001), US$ billion	1.5
ICT in Merchandise Trade, US$ million (%)	162.00 (4.38%)
Penetration of ICT	
TV/100 (2001)	25.9
Telephone/100 (01.01.2003)	12.0
PCs/100 (2001)	1.5
Mobile Cell Phone/100 (01.01.2003)	10.6
Source: State Statistical Committee of Azerbaijan, USACC investment Guide to AZ 2001	



Source: State Statistical Committee of Azerbaijan, June 2002 and EIU

For the first 7 months of 2002, there was an investment of 5,321.5 billion Manat in the Azerbaijani economy that has exceeded the amount of investments for the same period of

2001 for more than twice. 4,173 billion Manat (78%) of all investment were in FDI and 1,148 billion Manat (28%) was the share of the national capital. GDP growth of Azerbaijan for the period of January – December 2002 was 10.6%.

The market for telecommunication equipment in 2001 amounted at US$ 58.5 million, compared to US$ 60 million in 2000, a decline of 2.5%. The market for public network infrastructure was estimated to be some US$ 36 million and private network equipment US$ 22.5 million in the year 2001. The telecommunication market was expected to grow to US$ 200 million by 2005 with public network infrastructure estimated at US$ 150 million and private network equipment for US$ 50 million. Aztelecom invested US$ 17.3 million of its own resources in 2001 for the development of telecommunication systems, and was planning to invest another US$ 22 million in 2002. By 2005 it was expected that a total of US$ 350 million would have been invested in the telecom sector. US$ 110,2 million of this would be from Ministry of Communications internal resources, US$ 51,3 million from foreign investors and US$ 126 million from foreign credits. Aztelecom, the monopoly service provider, was slated for privatization and flow of foreign investments in telecommunication. This was expected to lead to a general improvement in the telecommunication system and thereby create a market for more advanced systems.

3.2. Regional and International Cooperation

There have been implemented several joint United Nations and Azerbaijan Government Projects.

Capacity Building and Data Transmission Network Implementation Project for the State Customs Committee of Azerbaijan. The project is the first Government cost-sharing initiative in Azerbaijan that introduces ICT into the daily management and functioning of the SCC. To main goal of the project is to enhance the technical potential and operational effectiveness of the SCC.

During the first phase of the project a sustainable connection for all Customs Checkpoints was installed that upgraded the data transmission network and expanded the network coverage so that the on-line mode of the data transmission network operates between the SCC, the Baku Chief Customs Department, and the customs checkpoints in Khachmaz, Tovuz, Astara, Ganja, Evlakh, Ali-Bayramly, Bilasuvar, Khudaferin, Samur, Yalama, Boyuk Kesik, Sinig Korpu, Massaly, and Lenkoran. The system was thoroughly tested and the results were the subject of a technical conference attended by over 150 representatives from the State and private sector scientific and telecommunication community. Currently the dial-up mode is still being used in the Nakhichevan Autonomous Republic, Belokan, Sumgayit, and Bina customs checkpoints. Their transfer to the on-line mode is scheduled to take place in 2003.

The second phase of the project includes the establishment of a computerized database that will register violations of Customs Law, violators. The documentation will provide easier tracking of the movement and routes of illegal substances and thus facilitate the combating of smuggling and other violations of the customs law.

Computerized Customs Registration and Control System (CCRCS)

One of the main activities of the customs checkpoints is the registration of goods and transportation used to cross the border, monitoring and controlling the information contained in the Cargo Customs Declarations (CCD). The second phase of the project envisages utilizing information technology to improve the overall effectiveness and efficiency of the process. In addition, a computerized CCD registration and data control system should make interaction between clients and customs officials easier, more accountable, and transparent.

Computerization of CCD will allow customs brokers to provide advise to their clients, assist in the completion of documentation and serve as intermediaries. Declarations will be made electronically at checkpoints.

UNDP has been providing ICT assistance through a variety of projects since 1995 and it was acknowledged that it would be useful to provide an overall national strategy to assist the Government further develop the ICT sector. Therefore UNDP organized an ICT evaluation mission by an independent ICT expert Mr. R Labelle in June 2001. A draft of National ICT Strategy (NICTS) was then prepared and submitted to the Government. This project enables UNDP to provide ongoing assistance to finalization and initial implementation of a NICTS for Azerbaijan.

While the Government of Azerbaijan is responsible for the overall effective management and execution of all aspects of the project, it has selected the SSAC to be the executing agency of the project.

3.3. Information Infrastructure and Internet

3.3.1. Telecommunications: present situation

A modernization programme to 2006 for the national communications system was being implemented in three stages with an investment of US$ 350 million. This telecommunications development programme was based on accelerated improvement of the international television network by switching to fibre-optic and satellite channels. Now, direct channels connect the country to Rome, London, New York, Frankfurt, Ankara, Moscow and other centres. In 1991, there were only 30 direct satellite channels; by 2001 the number of channels exceeded 800.

It was planned to upgrade the communication network in the country to a digital system by the year 2007. Today, digital equipment accounts for 37.1% of operating ATE - in the city of Baku 41.2 % - with the remaining being analogue. The telecom system was concentrated in the Baku region. The Ministry of Communications plans to enhance the penetration level of telecommunications in the regions and villages of the Republic to 50 in every 100 families by the year 2007.

Fiber-optic lines on Azerbaijan. Within the framework of the “TransAsiaEurope” project, network of fiber-optic communication lines was built in the country that has increased application of digital technologies in infrastructure of the communication.

Also fiber-optic communication line has been constructed along the railway Baku - Tbilisi. This cable has been constructed within the TRACECA project.

Telecoms and mobile. Bakcell (GSM 2000) and Azercell (GSM 900) are two cellular services operators in Azerbaijan. Currently, there are more than 870,000 cellular service subscribers with a geographical coverage of 63%. Azercell planned to increase its subscriber base up to 700,000 and its coverage to 95%. Bakcell had 120,000 users and invested US$ 10 million in 2001 to enlarge their capacity to 200,000.

Azerbaijan: Growth of Mobile Telephone subscribers (1993-2001)

Year	Baksell	Azercell	Total	Growth
1994	**2000**	**-**	**2000**	**-**
1995	**5000**	**-**	**5000**	**250%**
1996	**12000**	**2750**	**14750**	**295%**
1997	**18000**	**20371**	**38371**	**260%**
1998	**26000**	**55831**	**81831**	**213%**
1999	**30000**	**179640**	**209640**	**256%**
2000	**70000**	**380414**	**450414**	**215%**
2001	**120000**	**519346**	**639346**	**142%**

Data on Telecommunications of Azerbaijan (2002)

№ №	Main indicators	Data of the Regional Commonwealth of the Communication and Telecommunication Conception of Azerbaijan					Place of Azer-baijan in CIS for 2001
		Azer-baijan	According to RCC		According to the Conception		
			Ave-rages in CIS	Pages	Ave-rage data	Pages	
1	2	3	7	8	9	10	11
1.	A number of telephone sets per 100 residents of the Republic	10,84	14,53	18	12,9	42	8
2.	A number of telephone sets per 100 residents in the capitals of the Republic	23,4	28,24	23	42,8	42	7
3.	A number of telephone sets per 100 rural residents in the Republic	3,63	5,75	18	-	-	7
4.	A number of Internet users per 10000 residents	32,13	109,10	34	-	-	10
5.	Tariffs for long-distance calls for 1 minute from the capitals of CIS	9,7	4,68	78	-	-	11
6.	Specific gravity of investments at the own sources (%)	41,9	75,3	102	-	-	12
7.	Average annual number of communication employees (thousand people)	10,60	57,60	87	-	-	6
8.	Engaged in communications in % in ratio to the number of employees, engaged in economy of the country	0,43	0,78	88	-	-	12
9.	Average annual number of officials (administration) in % from the whole number of employees of electronic communications	2,40	7,18	110	-	-	11

10.	Average monthly salary of employees in telecommunications (in USD)	92.40	107,7	107	-	-	8
11.	Quality of the work of long-distance telephone communication in %	32,8	50,8	47	-	-	9
12.	Outgoing international telephone traffic (millions of minutes)	29,60	177,20	53	-	-	9

Both operators offer international roaming, which is relatively expensive. Prepaid mobile communications services, mobile banking, Internet, SMS and other value-added services allowed operators to attract customers from other telecommunication sectors, such as paging and trunk communication. In July 2001, Azercell in cooperation with ISP Azeronline, introduced the mobile Internet in Azerbaijan.

According to research conducted by World Bank, Azerbaijan holds first place among the CIS countries in terms of its penetration rate of cellular-phone-using subscribers. Telecommunications in Azerbaijan. Out of 420,000 telephone lines existing in Baku, the national operator PO BGTS is managing for 375,000 lines (an 89% share of the market), Ultel - 15,000 lines, Catel - 10,000 lines, Azeurtel - 20,000 lines.

Telecommunications in Azerbaijan (01.01.2003)			
Total PSTN Telephone Lines	982,500		
PSTN Swithes:	Nakhchivan Autonomous Republic	Baku - city	Total in Azerbaijan
Step by step		6.3%	4.0%
Cross-bar		45.7%	55.0%
Digital	100%	48.0%	41.0%
Telephone Lines per 100 Families:		97.41%	53.66%

Alcatel's System 12, Marconi's System X, Nortel and DMC switching systems were installed in Baku. Catel (Caspian American Telephone Company), Joint Venture between Ministry of Communication and Metro media International Communication (USA) utilized wireless and CDMA technology for provision of telephone communication services. Azeurotel utilized Marconi System X for developing of their network.

Investments to the communication sector (1991-2001)

(US$ million)

Years	Budget Investment	Investments from Ministry of Communication		Foreign investments to joint ventures		Total
		Investment	Credit	Investment	Credit	
1991	3,7	-	-	-	-	3,7
1992	4,7	-	10,9	-	-	15,6
1993	15,1	-	-	2,3	-	17,4
1994	0,6	-	-	2,0	-	2,6
1995	3,1	-	-	3,4	-	6.5
1996	6,7	-	-	14,3	-	21,0

1997	-	8,2	-	6,5	-	14,7
1998	-	13,1	12,6	50,0	14,5	90,2
1999	-	20,0		26,4	25,7	72,1
2000	-	13,0	10,7	35,0	20,0	78,0
2001	-	18,2	8,3	2,4	15,0	43,9
Total	33,9	71,8	42,5	142,3	75,2	365,7

Density and coverage of the cellular communication services in Azerbaijan varies considerably from region to region. These offer a good market growth opportunities for the telecom manufacturers as well as for the software developers. A third mobile operator was expected to appear shortly in the Azerbaijan market.

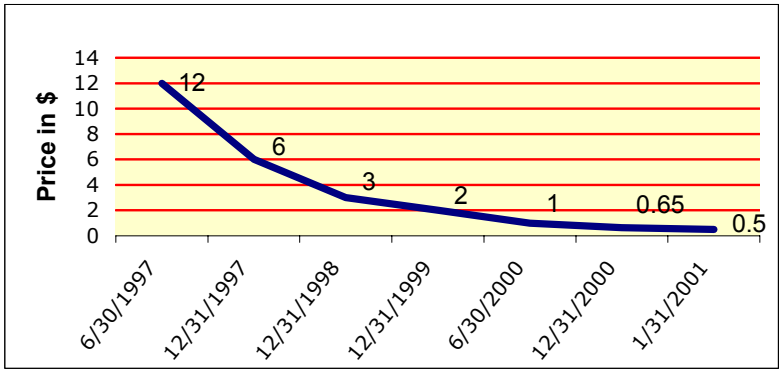
Internet Service Providers. Internet and broadband

Currently, there were 13 Internet Service Providers. The market for Internet service providers in Azerbaijan was growing rapidly. In 1996 and 1997 a number of ISPs were established that started to offer basic services. In the beginning, the services offered were expensive and of poor quality, but constant growth of the ISPs in the country has resulted in the formation of a highly competitive ISP industry in the Caucasus region.

Internet market growth is slowed by monopoly of Aztelecom. As a result, large ISPs were switching to satellite channels in order to provide affordable services.

Discussions have been held with a number of ISPs in Azerbaijan. From these, it was learnt that the Ministry of Communications planned to reduce the prices of calls and to charge users on a per second basis rather than per minute. The Ministry has imposed a fixed monthly telephone charge of US$ 4.32 for Internet access (2002). The average price of an Internet connection varied between $0.70 and $0.50 per hour in 2001. Some ISPs provide unlimited access to the Internet for $50-30 per month, compared to $150 in 2000. Overall, Internet access prices in Azerbaijan were falling as can be seen in below figure.

Azerbaijan - Internet Access Pricing (1997-2001)



Source: Azerbaijan Development Gateway: e-Readiness Assessment Report 2001

The decline of Internet access price was one of the main reasons for the growth of number of Internet subscribers in Azerbaijan. Today, it is more convenient for individuals and

organizations to get unlimited access that could be purchased about $30.00 -$50.00 depending on provider.

3.4. Networked Learning

3.4.1. ICT in Schools: Computerization Phase

There is no wide statistic information on levels of computerization in Azerbaijan educations system. According to the Statistic Report of UNESCO, there are computer classes is 30% of schools (40% in the urban schools, and 20% in rural schools) in the Azerbaijan Republic. Average number of pupils per one computer in schools, equipped with computer classes in the Republic is 25 pupils, including 20 – in urban schools and 30 pupils in rural schools. At this percentage share of IBM–compatible computers to the total number of computers, used in educational institutions, is only 5% and percentage of the computers and using the operation system Windows to the total number of IBM–compatible computers in the schools is 60%.

30% of the schools have access to the Internet, 20% of the schools have their own web-pages Percentage of the teachers, who passed the courses of the computer literacy (among the teachers of the primary school) is 15%, teachers on subjects, besides the teachers on computer science, is 3%, and among the teachers on computer science is 20%. At this 70% among the teachers on information technologies are able to work with spreadsheets and word processing[1].

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However the number of projects had been implemented within the educational institutions of Azerbaijan. In 2002 within the framework of the first tranche of the World Bank (5 million USD) 20 schools in the 5 biggest cities of Azerbaijan have been provided with modern PC classes. It is expected that the second tranche for this actions from the World Bank will be amounting at 14 million USD till 2010. International NGO Project Harmony implements a school connectivity project, a pilot program to connect 10 Azeri schools and conduct trainings for teachers. The project aims to create an online network of teachers and develop partnership with schools in the USA and other countries. Junior Achievement (US) cooperates with the Ministry of Education in Applied Economics in 20 high schools in Baku. Each school under the framework of the program received 1 computer.

Open Society Institute-Azerbaijan has largely worked with high schools, and is going to expand its activities on ICT in education to the primary level. OSI runs "I*Earn" project http://www.iearn.org in Azerbaijan. The program provided 9 schools in Baku and 2 in Sumgait with computers (1 computer per school).

3.4.2. ICT and High Education

Majority of students use computers in universities. The computers are mostly used for typing. There is also a group of students who use computers at a proficient level.
Exxon Company in cooperation with OSI-Azerbaijan and the US State Department assisted the State Oil Academy to develop one of its computer labs and offered computers to equip this lab.

[1] Source: "The Main Indicators of ICT application in Secondary Education of the countries of CIS and Baltics" – Statistic Report of UNESCO Institute on Information Technologies in Education, 2002

Baku State University (more than 300 computers per 14000 students), with the support of OSI-Azerbaijan and IREX/IATP, has created a resource center to enhance ICT development in education. University and high school teachers receive basic computer and Internet skills at this center and then train others to transfer computer skills further.

Azerbaijan International University has 400 more computers per 6000 students.

Open Society Institute-Azerbaijan in partnership with ***IREX/IATP*** and ***Exxon*** created 5 Internet resource centers for higher learning institutions in Baku: Baku State University, Medical University, Khazar University, Western University and the Technical University. They have continued this work with the universities in 4 other regions: Nachichevan, Mingechevir, Ganja.

In 2001, for the first time the faculty of "Improving qualification and re-training" by use of distance learning tools had been established at the ***Azerbaijan State Economic University***. At the present time 50 students study at this faculty.

Khazar University in cooperation with ***Western University*** and ***IREX*** initiates a distance-learning course on International Negotiations (started in Fall 2001).

Application of ICT in education was increasing gradually and was steadily growing. Higher learning institutions use IT not only for educational but also for marketing purposes. Private universities were more advanced in ICT development as they could afford the expenses being the self-funded entities.

University web-sites featured information on academic programs and courses offered, academic departments and centres, facilities, news and events bulletin, contact information, faculty and staff and online application forms. Some private universities, for example Khazar University, used their web-sites for online admission.

Kavkaz University works to foster development of wireless communication among 11 high schools. The teachers involved in the project within which several distance learning courses in Kuba, Alibairamli, and Nakhchivan are being currently developed.

In 2000, ***Khazar University*** introduced the first ever course on E-commerce delivered by professor from California State University, US. Some 50 students registered to this course experienced an extensive use of Internet in education through WebCT.

3.4.3. SSAC as National achievement in learning

Azerbaijan is the first republic of the former Soviet Union, which in 1992 made a political decision on conduction of the sole admittance examinations to the higher and secondary special educational institutions of the country on the base of sole test exams. At the present time the State Student Admission Commission – body, created specially for this purpose, was charged to conduct these examinations. Since 1992 this organization develops, organizes and conducts all admittance examinations to the Higher and Secondary Special Institutions of the country and has ten-year-experience in introduction of ICT into the process of education. Since 2001, according to the Azerbaijan President's Decree, SSAC is authorized to conduct attestation on professional fitness of the state employees during their admission to the job.

During the admittance examinations SSAC evaluates the knowledge level of applicants on the base of the standards, developed on the program material within school course and provides the formation of the contingent of students for each educational institution of the country. During the arrangement, SSAC take into account demands of the Higher Educational Institutions, which include vacant places for each specialty and requirements of this educational institution to the knowledge level of their future students.

Enrollment to vacant places is conducted according to the applicants' results, demonstrated at the sole exam, and their desires, reflected in application.

All the stages of the admittance examinations process, beginning with the projecting of the optic forms, used at the examinations, formation of the state standards to the knowledge level of the applicants, creation and regulation of the database on applicants, personnel, experts, educational institutions, etc.; selection and training of the personnel, engaged in the process of examination and ending with the provision of each applicant with information concerning his/her results, and each institution with the list of their students together with statistic analysis of the results and recommendations on its further development, are built as an open socio-technical system with full automated technological procedures.

The whole examination cycle, as the sole technological process, is divided on many stages, clearly planned by time, term of fulfillment and responsible for its realization. Applying IT technologies in management and monitoring of the whole process allows the people taking decision to justify the process and conduct correction measures in case of extraordinary situation, influencing on the conduction of examination or its one phase.

The main component of conducted admittance exams with applying the modern technologies is that they allow not only evaluate the applicants' results, conduct their assignment by the specialties within the short-term, but also give real assessment of the education level not only in the country in general, but by each region, city, village and even separately by schools and subjects.

Use of IT technologies allows to save time, human resources, excludes subjectivism and any kind of negative in the process of examinations, makes the process practically feasible.

Since 1999, SSAC has its own interactive internet site (www.tqdk.gov.az), which provides the population with information service before and after the examination process. The applicant is given the chance to participate at the virtual exam, compare his/her knowledge with the other participants of this exam irrespective of his time of inclusion to the site.

Configured software and hardware of the admittance examinations process are developed by the specialists of the SSAC and is original development at the whole post- Soviet space.

Introduction of information technologies allowed to provide:

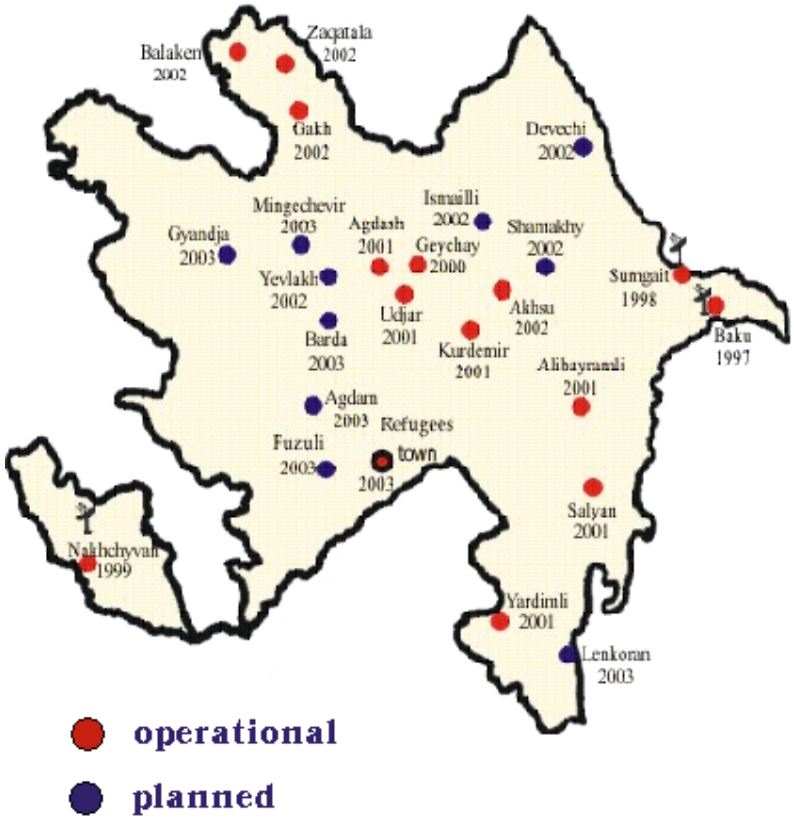
- Transparency of the examination process;
- Acceleration of the results' processing;
- Exclusion of subjectivity in assessment of the knowledge;
- Equal access to the education for various layers of the society;
- Reduction of the human and financial costs of the state on the examination process;
- Raise of the education process motivation.

3.4.4. Training Centres

UNDP has been providing ICT assistance through a variety of projects since 1995 and it was acknowledged that it would be useful to provide an overall national strategy to assist the Government further develop the ICT sector, particularly in the following projects:

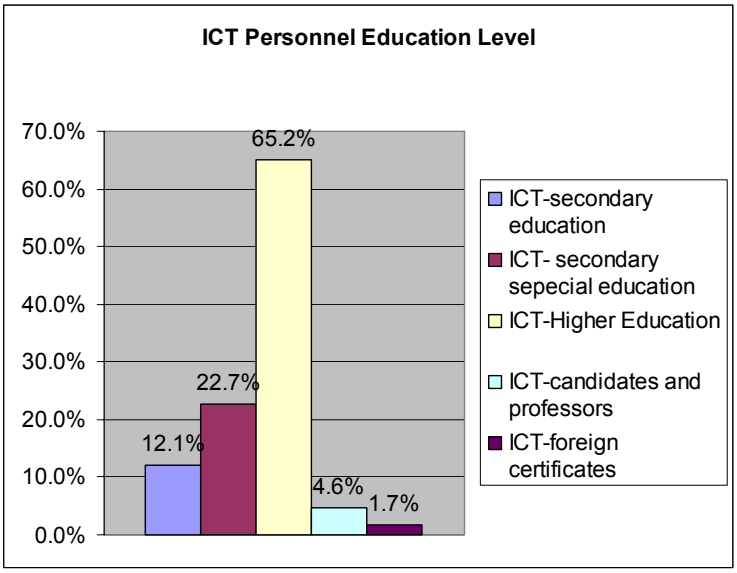
- Strengthening of Computer Technology and Training Center for Azerbaijan – AZE/94/002;
- Establishment of Sumgait Computer Centre for Training and Information and Telecommunication Services – AZE/96/007;
- Establishment of Nakhchyvan Computer Centre for Training and Business Information Services – AZE/97/001; and
- Regional Academy for Online Network Governance and System Administration – AZE/01/004.

The realization of all these projects gave the opportunity to establish 14 regional information centres and to organize IT trainings in these centers:



3.5. Networked Society

Azerbaijani Internet services market was growing rapidly. National organizations were showing more and more interest in the Internet. According to Azerbaijan Development Gateway (AzDG), there was 12 000 Internet subscribers in 2000, 35 000 subscribers in 2001 and more than 240,000 active Internet users due to widespread Internet cafés and Universities providing Internet access for students in 2002. Predominant users (36.1%) of Internet were 18-25 years old and 14-18 years old (27.8%). Users mainly accessed Internet for chat (22.1%), e-mail (21.2%), search (18.3%), games (11.5%), and forum (8.7%).



3.6. E-Content

National web content in Azeri language is growing in Azerbaijan. The main constitutes of the national content are web-sites of local businesses, state authorities, universities and other organizations. About 50% of private universities and 20% of state universities in Azerbaijan had their own websites.

Some Azerbaijani mass-media in Internet

Newspapers	URL	Language
Ayna	http://www.ayna.az/	Azerbaijani
Azerbaijan	http://azerbaijan.news.az/	Azerbaijani
Bizim Asr	http://bizimasr.media-az.com	Azerbaijani
525-ci Gazet	http://www.525ci.com	Azerbaijani
Adalet	http://www.adalet-az.com	Azerbaijani
Hurriyyet	http://www.hurriyyet-az.com	Azerbaijani
Xalq Jabhesi	http://xalqcebhesi.az	Azerbaijani
Olaylar	http://www.olaylar-az.com	Azerbaijani
Ses	http://www.ses-az.com	Azerbaijani
Sherg	http://www.sherq-az.com	Azerbaijani
Yeni Musavat	http://www.yenimusavat.com	Azerbaijani

Zaman	http://www.zaman.com.az	Azerbaijani
Zerkalo	http://zerkalo.az	Russian
Echo	http://www.echo-az.com/index.shtml	Russian
Baku today	http://www.bakutoday.net	English
Baku sun	http://www.bakusun.az	English

3.7. Networked Economy

According to the data of the American Chamber of Commerce in Azerbaijan, since 1994 from the moment of signing the IMF Stability Pact by Republic, considerable progress in almost all sectors of Azerbaijani society – in management of the economy, in the legislation sphere, in strengthening international and business communications, improvement of the labor conditions, etc. was reached. The economy of the country is stable, constantly developing, there is a low level of inflation and a financial stability, favorable business-climate are indicative. Till the present time Azerbaijan remains at the first place among the CIS countries by the foreign investments per capita.

3.7.1. ICT - sector of Economy

According to the strategy of economic development of the country, new industrial policy stipulates the investments in the sphere of services, connected with the high technologies, in production of technologically modern equipment such as wireless and cellular phones, radio-electronic devices, specialized means of communication. The State Program on poverty reduction and economic development (started in October 2002) will allow to create a lot of job places, promote the establishment of many high-tech enterprises in the ICT sphere.

Program on assistance to the development of small and medium enterprises (started in August 2002) opens the way for the projects on creation of incubators for small companies in IT field, oriented on export of ICT products and services.

Azerbaijan: Market for ICT Products

(US$ million)

No.	**Items**	**1998**	**1999**	**2000**	**2001**	**2002**	**2005***
1.	**EDP Computer Hardware**	30	28	32	38	40	60
1.1	Servers	8	6	7	10	10	15
1.2	PC& Workstations/Other add-ons	22	22	25	28	30	45
2.	**EDP Data Communication Hard-ware**	6	5	5	7.5	8	10
2.1	LAN Hardware	4	3	3	4.25	6	7
2.2	Other data communication	2	2	2	3.25	2	3
3.	**Software & Services**	4	3.5	6	7.5	10	50
3.1	Software Products	2.5	2	3.5	4	5	20
3.2	Software Services	1.5	1.5	2.5	3.5	5	30
4.	**Telecom Equipment**	65	61.5	60	58.5	50	200
4.1	Public Network Equipment	40.5	38.5	38	36	20.5	150
4.2	Public Network Equipment	24.5	23	22	22.5	29.5	50
a)	Terminals Cell Phones						
b)	Phone, Faxes						

5	**Office Equipment**	11	10	12	11.5	12	15
5.1	Copiers	7	6.5	6.5	6.5	8	10
5.2	Other Office Equipment	4	3.5	4.5	4	4	5
6.	**Semiconductors**	2	2	2	1.5	1	---
7.	**Passive Components**	2	2	2	1.5	1	---
8.	**Scientific Instruments & Control and Measurement Equipment**	10	12	12	12.5	12	15
TOTAL		**130**	**124**	**131**	**138.5**	**200**	**350**

Source: ITC project file / European Information Technology Observatory, 2000

Azerbaijan: Global Import / Export of ICT Products

(US$ million)

Product Category	**Import**			**Export**		
	1998	**1999**	**2000**	**1998**	**1999**	**2000**
Semiconductors	2	2	3	NA	NA	NA
Electronic Data Processing (EDP)	15	9	17	1	1	1
Office equipment	1	1	0	0	0	0
Telecommunication	122	55	82	4	2	3
Other components	31	17	19	1	0	0
Scientific equipment	23	21	35	3	3	2
Total	**194**	**105**	**156**	**9**	**6**	**6**

Source: ITC/PCTAS database, 1996-2000

Azerbaijan – Export of Electronic Products

(US$ thousand)

Item	**1999**	**2000**	**2001**
Electronic calculators	0.11	0.03	0.1
Counting devices	217.1	651.1	481.3
Watches & spares	4.9	4.2	2.5
Electronic process control equipment	10067.2	5317.9	9251.5
Photo and cinema products	0.1	0.2	2.6
Total	**10289.4**	**5973.4**	**9738.0**

Source: State Statistical Committee of Azerbaijan, June 2002.

Azerbaijan - Import of Electronic Products

(US$ thousand)

Item	**1999**	**2000**	**2001**
Electronic calculators	293.7	77.6	395.5
Counting devices	7289.7	7693.4	12193.7
Watches & spares	189.3	343.7	342.5
Electronic process control equipment	15732.3	155641.7	121087.7
Photo and cinema products	83.4	181.7	239.6
Total	**165188.1**	**163938.1**	**134259.0**

Source: State Statistical Committee of Azerbaijan, June 2002

Import/Export of Computers and their Blocks

(US$ thousand)

	1997	1998	1999	2000	2001
Computers, their blocks	6365.8/ 0.6	14066.6	7289.7	-	-
Computers, item	-	-	-	7693.4/ 651.1	6698.7/ 358.6
Computer blocks and plants, item	-	-	-	6289.1/ 86.9	5495.0/ 122.7
Total	**6365.8/ 0.6**	**14066.6**	**7289.7**	**13982.5/ 738.0**	**12193.7/ 481.3**

Source: State Statistical Committee, 2002

Import/Export of Computers and their Blocks

(US$ thousand)

	1997	1998	1999	2000	2001
Tapes, disks, video cassettes	841.6/ 0.8	2028.0/ 5458.9	7289.7	-	-
Recording tapes, magnetic disks and cards, item	-	-	2372.0/ 7835.4	1975.1/ 2833.0	916.7/ 5612.0
Total	**841.6/ 0.8**	**2028.0/ 5458.9**	**9661.7/ 7835.4**	**1975.1/ 2833.0**	**916.7/ 5612.0**

Source: State Statistical Committee, 2002

3.8. E-Government

Azerbaijan is on 78 place among 133 countries in implementation of E-Government according to UNPAN E-Government-Global Survey.

Source: http://www.unpan.org/e-government/globalleaderstables.htm

About 30% of Government Ministries and Committees have its own official websites. For more details see: http://www.gateway.az/eng/partners.shtml .

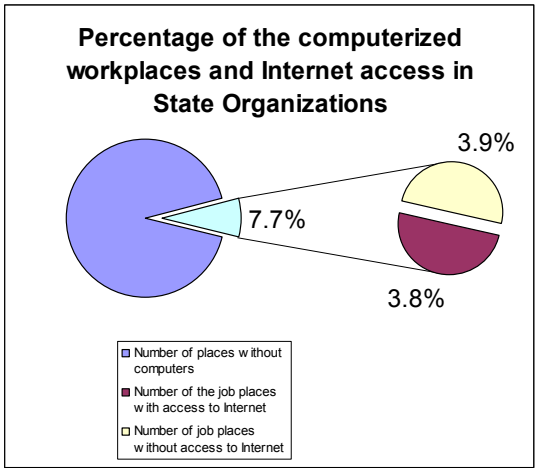
Since 2000, the Information Recourse and Technologies Center of Presidential Office provides free of charge registration of domain gov.az for state organizations. At the present time 24 organizations have got gov.az domain.

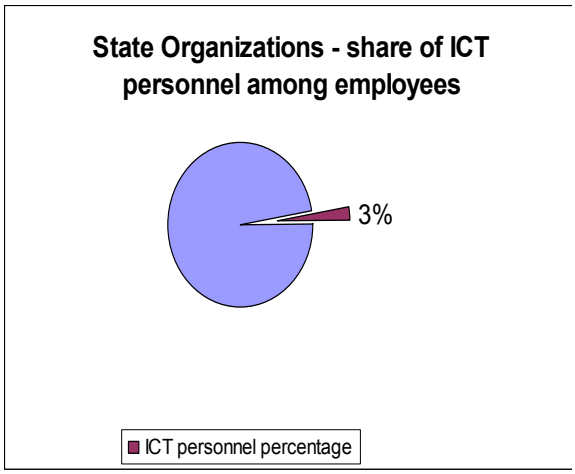
There is real need of wide application of ICT in the Republic, and there are favorable conditions for it. It demonstrates the following:

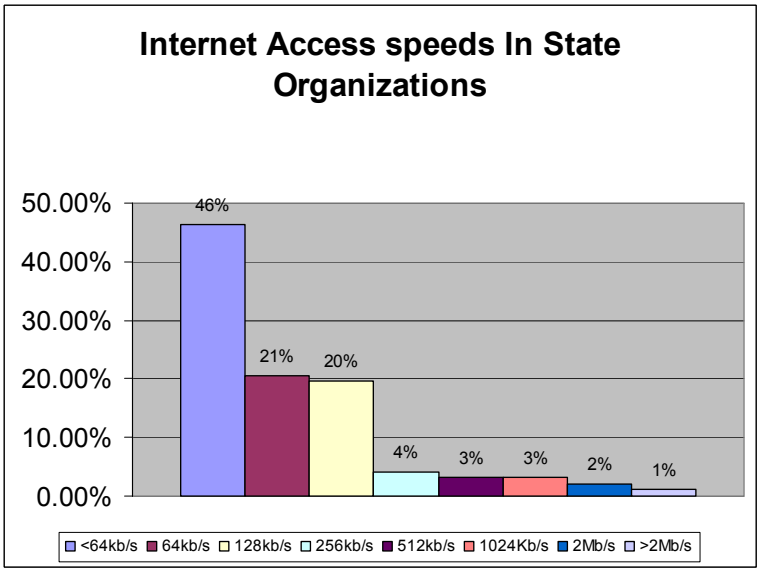
- Milli Majlis' (National Parliament) Information provision department presented web-site of Milli Majlis www.meclis.gov.az. Site reflects the structure of the parliament and permanent commissions, its present activity, international relations, biographies of deputies, the legislative acts.
- ICT is used for the testing attorneys, state employees. Within the framework of the reforms of the courts in the Republic, ICT was applied in selection of the judges, aptitude of the judges were determined by the tests.

- There is positive experience in formation of normative-legal base of information society in the country (see e-regulation, section 3.10.1.).
- Information system "Frontier: departure-arrival" is built and opportunity to apply ICT in frontier points is provided.
- With the aim of improvement of management and procedures in Customs system "Network of the transfer of data and automated system of control" is built.

There have also been a number of other important initiatives implemented by other partners from international organizations operating in Azerbaijan. However, these activities have also served to highlight the need for an overall National ICT Strategy to streamline and coordinate all the related initiatives so as to ensure lasting and sustainable results that serve the best interests of the country.







3.8.1. National ID-cards

Canadian Bank Note Company (CBN) has signed a contract with the Government of Azerbaijan for approximately $10 million US for the supply of 13 million national ID cards as well creation computerized issuing system for both ID cards and passports. Additionally the system will ensure the maintenance of a central database and perform border control functions. The solution will also include CBN's portable document inspection devices. CBN's Identification Systems Group has developed a Personal Identification Management System (PIMS) concept for governments. The system has the capacity to link all the government document issuance, inspection and tracking systems to a centralized database.

The ID cards and the system will be delivered and installed within the next 12 months by the CBN Identification Systems Group, which is the world's leading producer of passports, passport issuing systems, border control systems and travel document readers.

3.9. E-Business

National development strategy was being evolved and would focus on improving e-governance, e-competency of enterprises and availability of infrastructure for conducting of e-business and e-commerce.

Existing websites of local and international private organizations operating in Azerbaijan represent consulting, IT companies, banks, insurance companies, transportation companies, mobile telecom operators and ISPs.

Websites usually provide general information on the organization and services provided, photos of products offered, contact information, on-line consultancy for the clients, FAQ, etc. The banks' websites provide information about recent financial news and information, services provided, various applications on loans and credits, which can be printed out and completed in advance. But banks still cannot offer their clients home banking via Internet.

Centre of authorization of electronic credit cards Visa and MasterCard has already been established by "Azericard" processing center and will be fully implemented.

Now, many Banks of Azerbaijan Republic are the members of the international system "Europay International". They offer following types of cards: MasterCard Gold, MasterCard Standard, Cirrus/maestro, Virtual card, etc.

However, many business structures deployed Internet innovations and fostered e-commerce development. International Bank of Azerbaijan introduced the Internet Card that allowed purchasing goods and services online. It was obvious that businesses constituted the main driving force for e-commerce development as they realized e-shop benefits and were very enthusiastic about using them.

3.9.1. E-commerce

Project of electronic system of inter-bank payments in real time is implemented in banking system of Azerbaijan.

About 60% of local and international private organizations possess websites providing information on their activities in Azerbaijan; and about 4% were developing their websites. These websites represented consulting, IT companies, banks, insurance companies, transportation companies, mobile telecom operators and ISPs. A few websites represented sales dealers of various manufacturing products.

There are websites such as http://www.azerbaijanEmarketplace.com, http://www.azel.net etc. which provide their valuable resource for all those who want to expand their business in the Middle East, CIS countries, Africa and Indian sub-continent, whether you are buying or selling, from outside or within the region.

Various industries were presented at www.Bazar-az.com. It also reflects information about producers of goods, products' description and prices. Moreover, it contains information on products delivery and transportation. It is possible to sell and buy diverse products such as cars, paper, oil and corn via this site. www.Auction.az also offered wide range of goods for sale, but dealing operations were frozen due to the above-mentioned problems and absence of demand as an outcome.

The National Bank of Azerbaijan has implemented Azerbaijan Interbank SWIFT Payment System since 2001. The system consists of three main components:

- CAS - Central Accounting System (conducts payment functions).
- S.W.I.F.T. System of World Interbank Financial Telecommunication - secures usage of real time payment system.
- CIM - Central Interface Module (secures connection between CAS and S.W.I.F.T.).

Top.az Company is recognized as a leader in introducing e-solutions and B2C e-commerce in particular. This company was the first in Azerbaijan to introduce online shop "Sabina" for perfume and cosmetics. The payment was performed offline through cash on delivery and through credit cards. As online payment system was still not in use in Azerbaijan, Top.az Company was currently developing a payment system for its new online shop "Megashop", launched in June 2001. This shop sold Azerbaijani carpets, souvenirs and CDs of Azerbaijani music to foreigners.

There are also a growing number of other initiatives, like auction websites. Many Azerbaijani portals and big websites were trying to trade and conduct auctions. These websites usually offered advertisements with description of goods for sale or purchase. There were two websites www.auction.az and www.bazar-az.com that were supposed to encourage e-trade and service infrastructure development and information exchange that will embrace countries of the Caucasus, Middle Asia and Europe. Source: http://gateway.az/.

Some companies had started developing B2B e-commerce application in Azerbaijan. Top.az Company, in addition to its leadership in B2C e-commerce, was working in B2B commerce development. The company was in the process of negotiations for getting B2B franchising and was offering to develop and maintain B2B section of AzDG portal.

3.10. Network Policy

3.10.1. E-regulation

Azerbaijan adopted several basic laws and regulations designed to promote development of telecommunications and ICT sector. In 1998, Azerbaijan adopted the law on Information, Informatization and Protection of Information ("Information Law"), which created the legal framework for regulation of information resources, processes, systems and technologies. The Information Law authorized the use of electronic signatures only if it was possible to properly authenticate them of owner. Azerbaijan Civil Code allow to use electronic (digital) signature in commerce transactions under mutual agreement.

The Information Law further imposed restrictions on the use of "classified" information. Unauthorized use of classified information was strictly prohibited. Information was deemed classified if it contained State secrets or was confidential. State secrets include information concerning military, foreign policy, economy, science and technology, intelligence, counterintelligence and investigations. Confidential information includes personal databases on individuals or entities not available to the public.

Box 1 (see Annex IV) shows details of national normative Acts adopted by the Azerbaijan Government to develop the information communications and technology sector.

The Government has ratified a number of international treaties with Regulatory Bodies. Some of these are listed below:

- *Charter and Convention of International Telecommunication Union, adopted on 22.12.1992 in Geneva, and amendments, signed in Kyoto on 14.12.1994.*
- *Treaty "On cooperation in the sphere of governmental communication" between the Government of the Azerbaijan Republic and Ukraine Cabinet of Ministers", 2000.*
- *Provision for the establishment of the Conference of the European Post and Telecommunication Administrations, adopted on 07.09.1992 and procedure rules of the mentioned conference, adopted on 06.09.1995.*
- *Treaty "On cooperation in the sphere of provision of the governmental communication and information safety between the Ministry of National Security of the Azerbaijan Republic and Federal Agency o Communication and Information under the President of the Russian Federation, dated 2001.*
- *Treaty "On cooperation in the sphere of provision of the governmental communication between the Azerbaijan Republic and government of the Russian Federation", dated on 08.01.01.*

Information technology and communications in Azerbaijan were found to be under strong governmental regulation. Telecommunications, Internet services, subscriber television installation and operation were all subject to licensing by the Ministry of Communications. The Ministry of National Security licensed the production of information protection devices and software programs. The Ministry of Communications authorized all juridical and physical entities to provide communication services. All information systems, technologies, databases and equipment used in the ICT market must be also certified according to the State technical standards and safety requirements under the Ministry of Communications.

According to the list given in an attachment to "Rules of certification of communication services in Azerbaijan Republic", approved by the Cabinet of Ministers, dated 25/08/1998, more than 119 types of equipment were subjected to certification by the Division on Certification, Ministry of Communication.

Services, however, were not subject to certification. Services provided in the communication field could be certified according to the "Law on Communications". The certification laboratory met requirement of the international systems of quality. There were no non-State organizations or laboratories in Azerbaijan performing out certification or other types of testing. It was necessary to create a modern multi-profiled laboratory for certification.

Regulation of procedures on the development of the normative-legal Acts was partially on the basis of the Act of the Ministry of Communications entitled "Rules on the conduct of record – keeping at the Ministry of Communications". According to the approved Provision relating to the Council of Informatization under the Ministry of Communications, this Council was also authorized to develop the normative-legal Acts project.

The Ministry of Communications systematically conducted analyses of the efficiency of Acts and either made the necessary modifications or abolished the Acts altogether. It was observed that closer coordination was necessary in the law-making process between the Milli Mejlis (national parliament) and the Ministry of Communications.

From May 2001, the working group on "ICT Normative-Legal base" within NICTS Project started its activity. The group developed the law drafts on "E-Signature", "E-Commerce" and "E-Document". The drafts were prepared using models and recommendations of international organizations (European Council, UN, etc.) and best experience of developed countries. These three drafts have been already submitted to the National Parliament – the Milli Mejlis, for discussions. It is expected that adoption of these laws would remarkably increase the process of ICT developing in Azerbaijan.

The working group also carries out the analyses of European Convention on Cybercrime, adopted on 23 November 2001 in Budapest. In accordance with group outcomes the government authorities will make decision about joining Azerbaijan to Convention.

3.11. Main ICT projects

Azerbaijan: Main ICT projects

(US$ million)

Telecommunication Projects	
Investments on modernization of the communication system (Upgrade of Digital Switch for IP-telephony, ISDN, Broadband network, Frame Relay, ATM, new services SDH, ADSL, etc.) till 2005	870
TRACECA project on supply of fibre optic cable system for signaling for the railways of Caucasian Countries	35
EBRD project Trans Asia Europe fibre optic cable highway	28
BP project laying fibre optic cable along Baku-bilisi-Ceyhan pipeline	15
Information Technology Projects	
"National Information Communication Technology Strategy" Project	1,2
Tax Systems Project	15
State Oil Company Computer Automation Project	15
National Bank Automatic Banking Check Clearance Project	5
Capacity Building and Data Transmission Network Implementation for the State Customs Committee	1.275
BP project for Enterprise Resource Planning implementation	10
Computer Center for Training and Information and Telecommunication Services	0,99

Source: ITC Technology Team Mission Report, 2002

3.12. Positive and negative factors characterizing present situation

Analysis of overall E-Readiness preparation of the country, including existing information communication infrastructure, hardware and software, information resources, information services, legal base, show that initial conditions for acceleration of the information society building process exists in the country, at the same time there are still objective difficulties.

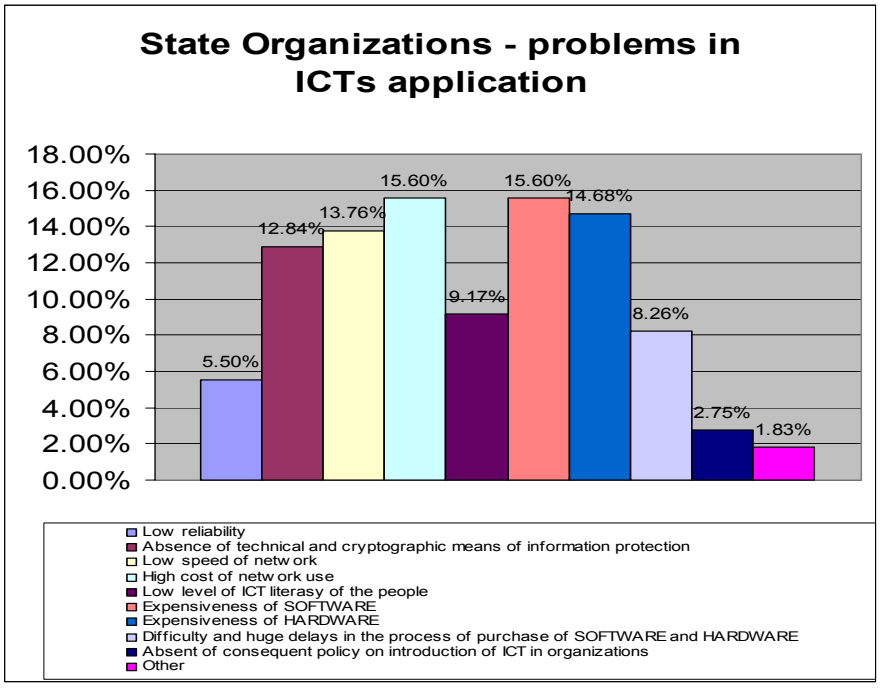
3.12.1. Positive factors characterizing present situation

- high level of population's literacy and education;
- Opportunity for lowering Internet connection prices in the country;
- Existence of private telecommunication operators and their growth;
- Positive experience in applying ICTs in national projects;
- Existence of favorable investment environment and its recognition by international organizations, including OECD, and readiness of foreign investors to participate actively in applying ICTs;
- Favorable geographic location of Azerbaijan and crossing of international transport highways and communication channels through the country;
- Stable development of economy and rich energy resources;
- Successful continuation of widely applying ICTs in the banking system of Azerbaijan;
- Modernization of the hardware and software as a result of Y2K problem resolving activity;
- Formation of cellular phone network covering overall republic and its permanent development;

- Upgrade and expansion of wired phone network and digital communication channels development;
- Opportunities of the Internet connections via long distance telephony in most regions, etc.

3.12.2. Negative factors characterizing present situation

- Expedient state policy defining directions for work connected with usage of ICTs and its priorities, ensuring coordination of activities, hasn't been fully determined;
- Legislative base regulating the usage of ICTs is not yet comprehensive;
- In connection with transition period of the country and existence of over one million refugees and IDPs as a result of occupation of 20% territory of Republic of Azerbaijan by Armenian Republic, the government can't allocate sufficient financial means for ICTs application;
- "Brain-drain" to the developed countries in connection with transition period;
- Little awareness of the population about advantages and opportunities of the ICTs;
- Low level of computerizing in whole Azerbaijan;
- The disciplines connected with ICTs at all levels of educational process don't meet the up to date requirements;
- The "digital divide" between rural and urban areas of Azerbaijan;
- Serious problems in broad usage of Azerbaijani language in the ICTs sphere, especially lack of Azerbaijani language support in software;
- Very slow process of nation-wide information resources formation;
- The Republic stays behind of many international integration projects on ICTs;
- Telecommunication tariffs existing in the republic create serious obstacles to using of ICTs;
- Existence of government monopoly hampering the innovations and fair competition in the telecommunication sphere.



4. Characteristics of the Country's Human Resources

With the experience of a decade of independence, Azerbaijan has entered the new millennium as a nation devoted to Sustainable Human Development (SHD), a commitment best exemplified by its current mission to eradicate poverty.

The early period of independence has by no means been an easy transition. With special consideration of the unresolved Karabakh conflict, the military occupation of territories by Armenian forces, the large subpopulation of Internally Displaced Persons (IDP) and refugees, the imbalance of economic development in the Republic's early years, and the legacy of the Soviet era, the nation's efforts to lay the foundation for human development should be applauded and further progress should be encouraged.

As part of the Soviet Union, Azerbaijan enjoyed certain advancements, especially in the areas of health and education. Achievements of this period are reflected by social indicators such as high levels of literacy, extended longevity and decreased levels of maternal and infant mortality. However, the Soviet Union, with its centralized system, fused to these gains a heritage of ideology, policies and practices, which presented certain shortcomings for a nation that wants to be in line with global standards.

Following independence in 1991, additional factors negatively impacted human development processes and contributed to the growth of poverty. The loss of the larger Soviet system meant less protection and oversight. The Gross Domestic Product (GDP) decreased decisively in the initial years, especially from 1991 to 1995. The decreasing GDP translated into lower levels of population income and diminished state allocations to education, health and other fields. As a result, human development indices decreased during this period.

Positive changes have taken place since 1996, however. Noticeable progress on human development has been achieved as a result of state policies and programs implemented with the support of international organizations. This progress is reflected in better economic indicators, an increase in the human development indices and the initiation of multi-pronged approaches to poverty alleviation.

Sustainable Human Development (SHD) has become a recognized and essential part of national, social and economic development planning, merging with the prevailing movement towards Poverty Alleviation (PA). Conceptual development of Sustainable Human Development and Ecologically Sustainable Development was decreed by the President in 2001. A Commission on Sustainable Human Development was established in coordination with the Ministry for Economic Development. Concurrently, a National Poverty Alleviation Strategy is being developed by the Government. This strategy will be based on advancements already made in sensitizing the communities and decision-making circles towards the introduction of well-planned human development approaches into poverty alleviation and economy development strategies. The commission is now working out a final version with the help of international experts and organizations.

Poverty in Azerbaijan remains the primary hindrance to sustainable human development. Its elimination or reduction will positively influence all other reforms.

4.1. Current Situation. Azerbaijan in Comparison to the World

According to the Global Reports on Human Development (UNDP: 2000, 2001), Azerbaijan's rating is gradually increasing. In 2000, the republic was ranked 90th among 174 countries, an improvement from its placement at 110th in 1999. The 2001 report places Azerbaijan 79th among 162 countries. The 2000 and 2001 reports are based on statistical data from 1998 and 1999. Growth of indicators specified for determining the Human Development Index (HDI) in 2000 and 2001 reveals progress and points out potential for sustainable development in the future. Annual growth of the Gross Domestic Product (GDP) is often interpreted as a significant factor in fighting poverty. In Azerbaijan, the GDP for 2000 grew by 11.1 percent, and in 2001 by 9.9. This slowing growth should not be understood as a reduction in economic development, but rather as a natural occurrence due to lags seen in year-to-year comparisons. Actual growth is shown by examining the per capita GDP: 574.5 USD in 1999, 654.5 USD in 2000, and 715.4 USD in 2001. Combined with Purchasing Power Parity (PPP), growth in these rates has also been recorded.

A review of the HDI indicators shows that expected life duration decreased in 1992 and 1995. Starting from 1996, GDP growth and an improved quality of life have resulted in an increase in life expectancy. Expected life at birth is estimated at 71.9 years, which is 5.5 years more than world indices. Education also declined in the early 1990s, a trend that may be explained by low living standards and military conflict.

The relation of per capita GDP to HDI shows the existence of further national potential for poverty alleviation efforts. The main goal in this direction would be to address the issue of uneven income distribution and disparities in regional development, as well as in other fields such as education.

Despite HDI increases in Azerbaijan, these achievements do not reflect the potential of the country. Sufficient under-utilized growth possibilities exist and should be exploited in the future. Azerbaijan continues to have similar natural conditions (territory, population density, arable lands per capita, energy production per capita) and human potential (educational level) as a number of countries that have gained higher results in human development.

Table 4.1. Human Development Index in Azerbaijan and its component indices

	1992	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**
HDI	0.718	0.707	0.696	0.692	0.697	0.706	0.772	0.738	0.746	0.751
Life expectancy Index	0.745	0.742	0.743	0.735	0.753	0.770	0.772	0.770	0.780	0.782
Education Index	0.870	0.880	0.880	0.880	0.868	0.871	0.878	0.880	0.895	0.895
GDP Index	0.540	0.498	0.464	0.462	0.470	0.477	0.510	0.560	0.563	0.576
CDP per capita	2 540	1 980	1 610	1 590	1 675	1 740	1 850	2 850	2924	3 148

In 1995, Azerbaijan's HDI was 1.8 percent higher than the average world indicators, but by 1999 the index was 3.1 percent higher than the world average. Interestingly, highly developed

countries experienced similar trends, but these countries were able to achieve more in their development. Azerbaijan has a greater potential to develop in this respect.

The technological achievements and low poverty level is noteworthy for the selected comparison countries as it is for other countries with considerable gains according to the human development index. Thus, if Azerbaijan were to take advantage of technological advances and maintain its course for poverty alleviation, the nation's HDI will see continued improvement in the next few years. To measure the status of technological innovations, an overview of patent applications by citizens and non-citizens helps to outline the magnitude and find their connection to Sustainable Human Development and Poverty Alleviation.

Table 4.2. Dynamics of human development index in Azerbaijan and selected countries

Countries	1995		1999	
	HDI	% difference from world average HDI	HDI	% difference from world average HDI
France	0.913	+34.2	0.924	+29.0
Austria	0.908	+33.5	0.921	+28.6
Portugal	0.853	+25.4	0.874	+22.1
Hungary	0.829	+21.9	0.829	+15.8
Mexico	0.772	+13.5	0.790	+10.3
Russian Federation	0.778	+14.4	0.775	+8.2
Bulgaria	0.775	+14.0	0.772	+7.8
Azerbaijan	0.692	+1.8	0.738	+3.1
Turkey	0.716	+5.3	0.735	+2.6
Jordan	0.704	+3.5	0.714	-0.3
Iran	0.688	+1.2	0.714	-0.3
Republic of Moldova	0.704	+3.5	0.699	-2.4
Uzbekistan	0.683	+0.4	0.698	-2.5

4.2. Technological Achievements Index

Recent achievements in development and poverty alleviation, along with a number of political and financial factors, have been dependent on access to products of modern science and technology, which are largely responsible for the transformation in such areas as governance and social services, health protection and education, human rights and gender issues, economic opportunities and new standards in public administration.

In 2001, a new way to estimate the efficiency of such policies and assess the respective environment and achievements of science and technology was proposed in the form of the Technological Achievements Index (TAI). This index describes the efficient use of knowledge and technology, not only of that created inside the country, but also the application of existing technology from other sources. The main purpose in calculating this index is to identify differences between countries. Additionally, this measurement has great importance for the identification and implementation of proper policies by decision-makers and institutions.

Technical Achievements Index is based on four coefficients: new technology creation; new technology prevalence; traditional technology prevalence; and professional competence.

UNDP assessed TAI in several countries beginning in 2001. This assessment covered those countries in which the proper statistical information for evaluating the index was available. For the Republic of Azerbaijan, the Technical Achievement Index was assessed for the first time this past year. Satisfactory results were found, and the TAI is rated as 0.379

Table 4.3. Technological Achievements Index and its indicators, 2001

Indicators	Index
New technology creation index	0
New technology prevalence index	0.043
Traditional technologies prevalence index	0.782
Professional competence of population	0.690
TAI	0.379

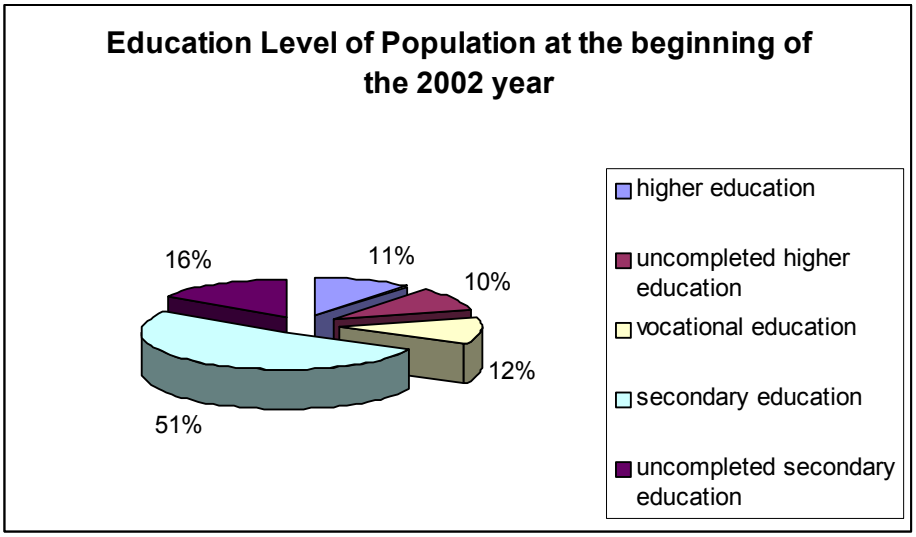
While analyzing the TAI, one can see that the number of patents issued and the payment of honoraria connected with this activity is relatively low. Increasing this index is an important factor for gradually increasing the general index. Therefore, it is necessary to develop public policies that will encourage scientific and technical progress. Speeding up the process of new technology dissemination could also play a great role in increasing the Technological Achievements Index.

Table 4.4. Comparative TAI (selected countries)

Country	TAI	Rankng on TAI	Patents for every 1 million people	Export in high and medium technology sector, general export %	Students in natural sciences, %	Use of elect., kv/hour, per capita
Austria	0.544	16	165	50.3	13.6	6,175
France	0.535	17	205	58.9	12.6	6,287
Spain	0.481	19	42	53.4	15.6	4,195
Hungary	0.464	22	26	63.5	7.7	2,888
Cyprus	0.386	33	-	23.0	4.0	3,468
Azerbaijan	0.379	-	-	6.9	14.1	2,420
Iran	0.260	50	1	2.0	6.5	1,343

4.3. Education

One of the indicators defining the Technological Achievements Index is the educational level of the population and the average number of years of schooling. Azerbaijan's 1999 population census indicates a high level of average education for the population above 15 years of age, equal to 10 1/2 years of schooling. In the same age group, 805 people per thousand had either a higher or secondary school education.



There is substantial potential existed for scientific R&D in Azerbaijan. There were 25 universities in Azerbaijan providing education in science, architecture, the arts, management, engineering. In the 2001-2002 academic year, there was an output from these universities of about 1,800 graduates with the basic knowledge and skills related to the ICT industry.

There are several obstacles to maintaining this level. One-fifth of Azerbaijan's territory is under occupation, and the educational institution network in these regions has been

completely destroyed. The majority of refugee and IDP children have no opportunity to benefit from normal educational processes.

School attendance has also suffered due to poverty. According to information received from NGOs, some children do not go to school for one month or longer during the school year. Understandably, the quality of their education is adversely affected. Extended absences from school are observed primarily among girls.

There are also some positive trends in the educational sector. The number of children going to kindergarten decreased from 1990 to 1996 and remained relatively low until 1998. These numbers have been changing over the last two years and have grown by 15 percent. The improvement of capital resources and fixed assets of kindergartens is an important aspect of development in this area.

Table 4.5. Institutions of state higher education (at the beginning of academic year)

	1990-1991	1991-1992	1992-1993	1993-1994	1994-1995	1995-1996	1996-1997	1997-1998	1998-1999	1999-2000	2000-2001	2001-2002
Number of institutions of higher education	17	18	22	23	23	23	23	25	25	25	25	25[1)]
Number of enrollments - total, thsd person	105,1	107,9	99,6	94,3	89,2	86,3	82,4	79,8	82,3	88,5	91,0	99,0
Number of students per 10 000 population	148	150	136	127	119	113	107	103	105	112	114	123
Number of new enrollments at the first grade - total, thsd person	19,5	20,5	12,2	13,6	13,4	15,4	16,9	18,9	18,8	19,9	20,5	23,5

In analyzing the changes that are happening in higher education, it is obvious that the emergence of private universities and the matriculation of students from these institutions is developing at a higher rate than at their state-run counterparts

Statistics about the relatively new private universities were not gathered until 1996. Between 1996 and 2001, the number of students at governmental universities and institutions grew 5.4 percent. At private universities, this growth was 43 percent

Further human development using knowledge-based development approaches will largely depend on the attention given to education in the field of natural sciences. A downward trend in the number of students studying natural sciences can be observed, while the areas of social and humanitarian sciences show growth.

The main growth has been in the field of economics; the number of graduates in this area doubled in 2000 as compared to 1990. Specialists focusing on industry and agriculture decreased 25 percent during the same period, a trend partially explained by the low level of compensation and the poor social image of workers in these fields. In order to overcome these tendencies, a special policy should be taken to involve more students in educational fields that can secure technical progress, mainly natural sciences and engineering.

4.4. Science

Azerbaijan has great scientific potential and already plays a leading role in the world in several sectors. This is particularly true concerning the natural sciences, including discovery, research and study in various scientific and technical fields and the efficient use of natural resources, both renewable and non-renewable.

Over the last six years, only 0.2 percent of Azerbaijan's GDP was allocated to scientific development. This amount is not enough to secure the development of science.

	Employees engaged in research	of whom them having academic degree of:	
		doctor of science	candidate of science
Total:	26933	1482	8241
of which:			
state sector	13561	692	3309
business sector	2748	44	303
higher educational institutions	10624	746	4629

However, Azerbaijan's present GDP is also less than many leading and potential leading countries. It is impossible to secure development in this field with a low percentage of government allocations for science. Considering the number of scientists and experts who are currently conducting scientific research, very little funding is available per scientist or expert. Azerbaijan's TAI index reflects the difficulty of paying for employees and providing modern equipment for the development of natural sciences.

Table 4.6. Applications to get patents by citizens and non-citizens in Azerbaijan

	1995	**1996**	**1997**	**1998**
Citizens	221	165	-	-
Non-citizens	31	16470	24308	33507
Applications total	252	16635	24308	33507

Table 4.7. Employees engaged in scientific-research and work (person)

	Total	of which			
		Number of employees engaged in scientific technical activities	of which		Scientific pedagogical employees engaged in pedagogical and scientific-technical work
			researchers and technicians	support personnel and others	
Total:					
1990	32315	23883	17934	5949	8432
1991	29975	21121	16375	4746	8854
1992	27178	17499	13817	3682	9679
1993	30555	20585	16538	4047	9970
1994	28617	18771	15340	3431	9846
1995	25869	15962	13068	2894	9907
1996	25316	15239	12513	2726	10077
1997	25322	14783	12074	2709	10539
1998	25587	15299	11402	3897	10288
1999	25969	15678	11510	4168	10291
2000	26370	15809	11646	4163	10561
2001	26933	15929	11691	4238	11004
of them who have academic degree of:					
doctor of science					
1990	1186	567	567	-	619
1991	1318	625	625	-	693
1992	1417	649	648	1	768
1993	1538	694	693	1	844
1994	1536	704	704	-	832
1995	1558	713	713	-	845
1996	1525	717	717	-	808
1997	1532	727	726	1	805
1998	1517	701	700	1	816
1999	1538	694	693	1	844
2000	1512	678	676	2	834
2001	1482	644	643	1	838
candidate of science					
1990	8905	4311	4299	12	4594
1991	8799	4063	4057	6	4736
1992	8704	3754	3751	3	4950
1993	8955	3863	3859	4	5092
1994	8808	3724	3720	4	5084
1995	8667	3610	3603	7	5057
1996	8445	3495	3490	5	4950
1997	8389	3474	3457	17	4915
1998	8241	3404	3388	16	4837
1999	8339	3381	3374	7	4958
2000	8380	3343	3328	15	5037
2001	8241	3224	3211	13	5017

As the exploitation of natural resources, mainly oil and gas, has increased with the wider involvement of foreign and local companies, some of these companies have funded scientific development. These allocations have been directed mainly toward the oil and gas sector. Development of this sector and projects related to research in these fields can also affect ecology and natural and social environments.

Some scientific research and technological work in other fields has been implemented through grants received from international organizations and foreign governments. However, research funded by foreign sources is often directed toward specific interests and may be of only secondary importance to Azerbaijan.

The protection and development of science and technology requires an improvement of national policy in these fields. Some steps have been taken recently in this direction. The President signed a special Decree on the National Academy of Sciences in 2001, and a discussion of the law on science is on the agenda of the National Parliament.

One of the factors influencing the Technological Achievements Index is the development level of natural sciences and the share of this sector among other sciences.

Table 4.8. For the distribution of post-graduate students according to specialization

	1990	1995	1996	1998	2000
Mathematics and Physics	9.2	10.0	11.7	9.2	6.5
Chemistry	7.3	6.2	8.1	7.6	4.0
Biology	8.4	9.7	8.8	7.6	7.1
Technical	24.4	26.5	22.1	15.8	20.2
Agriculture	7.0	7.0	3.2	4.3	3.7
Economics	5.7	8.5	8.4	14.1	15.3
Medicine	6.5	5.0	6.2	5.7	5.6
Philology	6.5	6.2	7.2	7.3	9.3
Law	0.8	0.6	4.6	4.6	7.1

5. National Innovation Capacities, Capabilities and their Effectiveness

5.1. Assessment of Azerbaijan's R&D capability

There were a lot of universities and scientific organizations in Azerbaijan providing education in science, architecture, the arts, management, engineering, etc. In 2001-2002, there was an output from these universities of about 1,800 graduates with the basic knowledge and skills related to the ICT industry.

The Institute of Cybernetics of the National Academy of Sciences of Azerbaijan and the Institute for Information Technology were the leading scientific institutions with training programmes in IT as well as fundamental and applied researches. Training and research was conducted in computer science, control systems for process industries and the application of IT in the communications sector, including satellite and fibre optics.

Efforts were being made through organizational restructuring to make Azerbaijan's scientific research and development more competitive and more focused on resolving problems in the industry, and on completing projects on time and within stipulated budgets. Government would assist the institutions through budget support to carry out high-tech R&D programmes and to provide the human resources trained to Doctorate and Masters levels that were needed in information technology.

The Azerbaijan Education and Research Network Association had been set up to share research ideas and projects, and to develop appropriate techniques to improve the IT sector and its application in the oil, gas and other industries. A scientific research and education network was being established to integrate the universities using fibre-optics for local connections, radio for the 5 to 6 km range, as well as satellite and other communications techniques. This would enhance the quality of the research output. It was further noted that during a meeting of NATO held in the Trans-Caspian region, Azerbaijan's R&D potential was rated as being among the highest and there were distinct possibilities of NATO awarding projects to Azerbaijan R&D institutions.

One of the major achievements of the R&D institutes was their development of a strong mathematical model based on fuzzy logic for the optimal placement of platforms in the oil fields. Application software was also developed based on the analysis of noise accompanied by signals to improve the effectiveness of the different types of signaling processes in the oil industry.

According to the Institute of Cybernetics, other intellectual achievements and software applications included:

- Diagnostics of sea oil and gas production platforms;
- Diagnostics of the process of drilling;
- Control and diagnostics of technical states of cyclic processes;
- Determination of seismic stability of the sea deep-water stationary platforms;
- Multi-channeled telemeter for the transfer of information with delta modulation;
- Device for the control over dynamic characteristic systems of drilling of wells;
- Device for the management of work of marginal well;
- Intellectual information-measurement system of determination of the weight of oil products in reservoirs;
- Multi-channeled device for the registration and analysed of seismic signals;
- Device, revealing vessels of bad capacity in circulatory system of the human at the appearance of thrombus;
- Device and software for submission of information through electronic multi-coloured panel of indication;
- Software for the solution of the problem of identification of parameters of technological processes robust methods and algorithms;
- Software for calculation of supplies of liquid oil;
- Software for modeling of the process of research of oil and gas fields, deposits of liquid oil; underground storage facilities, created in aquifers;
- Software for optimal distribution of sea oil and gas purifying platform;
- Software for minimization of vibrations of oil and gas pipelines, created by the internal hydrodynamic forces and other wave factors;

- Software for the regulation of systems of transportation of gas, including system of calculation;
- Optimization of adopted decisions in the systems of transportation of oil products;
- Software for the modeling of the processes of multi-phased filtration and diagnostics of contiguity of the water with oil during the movement of oil;
- Software for diagnostics of professional diseases in oil industry.

6. Major National Initiatives

Azerbaijan has geopolitical and political–economic prerequisites of the regional leader in ICT sphere, more precisely:

- *Republic is the geographic bridge between the Europe, Central Asia and Middle East; favorable climatic conditions – presence of 9 climatic zones out of 11 (there are not only permafrost and the tropics), and weather conditions are also favorable for all-the-year-round functioning of the thruway*.

- *It has natural resources in particular international experts evaluate oil-gas resources as 15 percent of the world supply.*

- *There are sufficient number of universities and schools, population has high level of literacy, scientific potential is high.*

- *According to the data of the American Chamber of Commerce in Azerbaijan, beginning from the moment of signing the IMF Stability Pact by Republic in 1994, considerable progress in almost all sectors of Azerbaijani society – in management of the economy, in the legislation sphere, in strengthening international and business communications, improvement of the labor conditions, etc. is reached*.

- *The economy of the country is stable, stably developing, low level of inflation and financial stability, favorable business-climate are indicative. The growth of the Gross Domestic Product (GDP) in Azerbaijan made up 10,3% for nine months of the current year.*

- *Legislative base is developing*.

- *Till the present time Azerbaijan remains at the first place among the CIS countries by the foreign investments per capita. For ten months of the current year investments in the economy of Azerbaijan made up 1.57 billion USD. It is 93.3% higher than for the same period of 2001. The share of the foreign capital made up 1.254 billion USD, or 77% of all investments*.

- *The country successfully moves forward by the way of democratization of the society, political situation is stable, politically opened for international cooperation*.

- *The culture of the country is unique, as it absorbed both Asian and European traditions, and although English and Russian are not state languages, but they are widely used in the society, hence exactly in Azerbaijan it is possible to create*

headquarters of international organizations, representatives of international organizations as of Asian so of European type without any difficulties.

A number of projects in economy, based on the wide application of ICT and realized with the support of UN, EU and a number of international organizations were reflected in the introduction part of this report. Azerbaijan is a member and participant of tens of international organizations and regional projects:

Since 2001 Azerbaijan is the member of the Council of Europe and has serious intentions to be a member of the European Union. In the spirit of documents of EU and the UN, aimed to the global change of countries' development level and level of living standards. Azerbaijan developed and will keep on developing the concrete programme measures to fight the poverty, develop all the business forms, bridge the digital divide, recover the ecological situation, develop the health care. We carefully follow the European indicators of development including the ICT sphere and consider them our target function. The European Union also considers our country as potential recruit and carries out the economic support of the republic. Till 2006 EU will allocate 35.5 million EURO as a grant to Azerbaijan.

Azerbaijan is the member of NATO's "Partnership for Peace" Programme. The North Atlantic Alliance is interested in the development newest technologies in Azerbaijan. In the framework of the scientific – research and educational network, jointly implemented by NATO, National Academy of Sciences and AZRENA Association, besides the creation of fiber optic network for the Academy and a number of republican universities, it is envisaged to develop the satellite and wireless communication of the Trans Caspian and Central Asian Countries. Projecting TransCaspian Network has been called as " Virtual Silk Highway" or simply "Silk Project". " Silk Project" will not only influence on fundamental, applied science and higher education, but also will stimulate the activity of governmental organizations and the third sector. - ***International Transport Corridor Europe Caucasus Asia (TRACECA)*** and revival of the Great Silk Way – project, which collected representatives of the eight Republics of the Southern-Caucasian and Central-Caucasian regions in May 1993 in Brussels. EC decided to carry out the program of longstanding aid, technical assistance and stimulation of the interest in international financial layers to the development of the transport infrastructure along the axis East-West. Later, within the framework of this initiative on September 8, 1998 in Baku authorized representatives of Azerbaijan, Armenia, Bulgaria, Georgia, Kazakhstan, Kyrgyzstan, Republic of Moldova, Romania, Tajikistan, Turkey, Uzbekistan and Ukraine, expressing the intention to develop the economic relations, trade and transport communication in the regions of Europe, Black sea, Caucasus, Caspian sea and Asia, signed the Main Multilateral Agreement on international transport on development of the corridor Europe Caucasus Asia – TRACECA and revival of the historical Great Silk Way – economic and cultural bridge between the East and West.

Organization of Black Sea Economic Cooperation (OBSEC). The headquarter of the organization was created by the countries – founders in Istanbul on June 25, 1992. This organization includes Azerbaijan, Albania, Armenia, Bulgaria, Greece, Georgia, Republic of Moldova, Russian Federation, Romania, Turkey and Ukraine.

Poland, Egypt, Israel, Slovakia, Tunis, Italy and Austria have status of observers in it. Organization, initiator of which is Turkey, is created for arrangement of multilateral cooperation between the countries, adjoining to the basin of the Black sea in such spheres as

infrastructure, transport, telecommunications, communications, tourism and ecology. Today share of the OBSEC is 5% of the world trade.

Organization of Economic Cooperation (OEC) is founded in 1985 and is the assignee of the Organization of the Regional Cooperation for Development, functioning on the base of Charter – Izmir Treaty, signed by three founders – Iran, Pakistan and Turkey on 12 March 1977.

Till the beginning of 1992, cooperation within the framework of this organization has mainly bilateral character. From 1992 the activity of OEC considerably activated in connection with the voluntary joining of 7 new states – Kazakhstan, Azerbaijan, Afghanistan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan. At the present time region of the OEC countries embraces territory of 7 million kilometers with the population of more than 300 million people.

The main task of OEC is the creation of the favorable conditions for the economic development in the region, consistent and gradual integration of the countries of the region into the system of the world economic relations of international community via arrangement of mutually beneficiary intra-regional economic cooperation and active mutual aid on different aspects of the social-cultural and scientific – technical development.

SUMMITS OF THE TURKISH SPEAKING STATES. After the collapse of the USSR and gaining the independence by the former Soviet Republics, with the aim of coordination of the actions on general contribution of the Turkish speaking states in the affair of the world, security, stability and development in Eurasia, taking into account the special ties of relations, based on the commonness of the history, language and culture and wish to create conditions for the improvement of relations with other countries of the region, by the initiative of the President of Turkey T. Ozal on October 30-31, 1992 heads of Azerbaijan, Kazakhstan, Kyrgyzstan, Uzbekistan, Turkmenistan and Turkey gathered in Ankara. Summit became the first direct contact at such a high level between the Turkish speaking states of the region, brought new stream in the relations between our countries, promoted the best mutual understanding each other, laid the fundament for regular meetings at the high level.

Azerbaijan is the participant of a number of huge international projects in the sphere of oil and gas production and transportation. Yet in 1994 Azerbaijan signed large-scale contract on joint development by a number of large western companies, such as BP, Exxon, Mobil, Chevron Texaco, Elf, Total, Fina, which according to the assessment of the Fobs journal are referred ton a tens of the bets world companies. It was called " Contract of the Century", and was the fundament of a number of other contracts on the development of oil and gas fields. Recently the contract on construction of pipeline for the transportation of oil and oil products from Baku to Jeyhan (Turkey) via Georgia was signed. In the coming years foreign investments of billions of USD in the economy of Azerbaijan are also expected.

6.1. Ways of transforming Azerbaijan in ICT-leader at the South Caucasus and TransCaspian space

On the base of statistic information, collected in the country, examination of the activity of the state organizations, private companies and NGO in the Republic technological ITC group made conclusion on strategic opportunities of Azerbaijan:

- *Scientific-technical, economic, intellectual potential of the country allows considerably increase the export of ICT-products and services.*
- *During 10 years Azerbaijan might increase the export of ICT production and ICT-services in ten times and reach the level of 500 million dollars by the 2011.*
- *Azerbaijan might become the center of TransCaspian Cybernetic Market (TCCM).*
- *Azerbaijan might become the integrator of E-Business in TransCaspian region.*

For business structures it is time for strategic strategically though-out, coordinated with the Government of Azerbaijan steps on liquidation of the oil narrowness of the country and development of a number of fields for ICT development and on the base of ICT development.

According to the strategy of economic development of the country, which was mentioned above, new industrial policy stipulates the investments in the sphere of services, connected with the high technologies, in production of technologically modern equipment such as wireless and cellular phones, radio-electronic devices, specialized means of communication, i.e. in the ICT sphere. The State Program on poverty reduction and economic development will allow to create a lot of job places, promote the organization of many high-technology enterprises in the ICT sphere.

Program on assistance to the development of small and medium enterprises opens the way for the projects on creation of incubators for small companies in IT field, oriented on export of ICT products and services.

Creation of the Monitoring Center of TransCaspian Region

Sharp struggle take place at the market of information production, created on the base of information resources basically as petrol is produced from oil. Besides, information resources are that used by the person type of resource, which created by himself, but not the nature. On the one hand, it is necessary to learn to create information resources, demanded by the "export" users, on the other hand, to develop in a rapid way information technologies, aimed on the creation of the competitive high-technology production. One of the main technologies of creation of information resources and production is monitoring.

Taking into account geopolitical-economic importance of the Caspian sea region, uniqueness of the ecology of the Caspian sea, interest of many countries to the region is huge. First what is necessary for the realization of the opportunities of the region is information resources. For example, there is scientific project NATO "Caspian region: examination of the atmosphere circulation, balance of the mass and energy, changes of regional climatic system".

Regular renewal of the idea on creation of some monitoring center of the Caspian sea, idea which recently again appeared at the regional level – it was supported by the President of Azerbaijan, Kazakhstan and Russian Federation. It is necessary to support and develop these ideas for the establishment of civilized relations at the Caspian market of information services. World experience shows that the most optimal way of regional monitoring system is approach, at which the function of the collection of the information is distributed between the participants and further exchange of the obtained information is stipulated. Such principle was used by the Azerbaijani specialists when the sea systems for the Main Sea Coordinating-Saving Center of USSR and Caspian Steam Navigation were created in the nearest past.

It is proposed to create regional information center in Azerbaijan for analyze of the state of political, economic and ecological space of the Caspian Sea.

In the composition of the information system we can emphasize three components. This is first of all. National subsystem of each member – state, secondly, this is regional subsystem with orientation on information provision of general interests of Transcaspian States and mutual information exchange. Finally, this is corporate subsystem, mainly oriented on needs of the private companies (especially transnational), expressing active interest to the strategic information on political, economic and ecological situation in the Caspian region. There is necessary potential in Azerbaijan for becoming the integrator of this process.

Creation of the Regional Monitoring Center and Experience Exchange in building Information Society

The present stage of the human development allows to reach abrupt improvement of the standards of living of the population on the basis of application of ICT in different spheres of the human activity within short period of time. Joint work with UNDP, spirit of this organization, directing the application of ICT for the extension of the opportunities of the people and range of selection versions of the development requires sober assessment and account of electronic situation of the country on the basis of many indicators, periodic collection of the qualitative statistic data, certifying the building of Information Society. A number of indicators can not be gathered by the state service on statistics, and requires the creation of national analytical monitoring centers. However, taking into account the regional character of many processes, it is expedient to create the Regional Monitoring Center and Experience Exchange in building of the Information Society.

Creation of the Regional Techno-parks and Incubators of small and medium companies in ICT field at the Caspian shore of Azerbaijan

Small companies, oriented on export of software products and services on development of software, are meant.

The main goal within the framework of the project is the activity on execution of investment and innovation projects, introduction of science-intensive developments, high technologies and production of the competitive at the world markets production. Such techno-parks and incubators are created for the assistance of formation and development of the science intensive firms and other organizations, fulfill the function of active management of the transfer of technologies and knowledge in the business sphere to the organizations, situating at its territory. Analyze of the activity of the national Academy of sciences, scientific-industrial unions, universities show that Azerbaijan has necessary potential for becoming the leader of this process.

Development of e-Business on the base of Information-processing Centers of international e-Commerce

It allows to provide internal and external cooperation of the participants of the trade within the frameworks of the sole information space, decrease the costs and improve the conditions of international trade via creation of favorable environment for information exchange with application of modern ICT in format of standards of Electronic Data Interchange (EDI).

These centers are called to promote first of all, the engagement of the small and medium enterprises in the division of labor and international trade. The main tasks of the centers are information provision of the participants of the foreign trade activity, assistance to the exporters and importers going out to the foreign markets, attraction of the investments for small and medium enterprises, execution of the foreign trade transactions, use of electronic data interchange for the reduction of documents circulation and simplifying the trade procedures.

As a result of realization of these projects, Azerbaijan will become the integrator of e-Business in TransCaspian region.

Export Program of science-intensive information technologies in TransCaspian Cybernetic market

The Program is prepared by the National Academy of Sciences and is based on fundamental researches of the scientists of Azerbaijan. There are such structures of qualified partners in the system of the Academy of Sciences as Institute of Cybernetics and Institute of Information Technologies, which developed models, algorithms, methods of synthesis of systems, based on unclear logic, developed by our compatriot Lutfi Zade, other components of soft-computing, robust systems, adaptive systems. Above-listed types of systems has purely practical aspect, might be successfully brought to the level of ICT-productions and be offered at the world market.

Creation of the electronic library of Turkish speaking countries within the frameworks of the project "Information Silk Way"

Project activity in the ICT field does not limited by the E-Commerce and e-Business. Within the framework of the Summit, due to direct contacts at the high level between the Turkish speaking states of the region (Azerbaijan, Kazakhstan, Kyrgyzstan, Uzbekistan, Turkmenistan and Turkey) it is supposed to create electronic library of the Turkish speaking countries.

Conclusions

In Azerbaijan, significant attention is given to: strengthening of economic, social and intellectual potential of the country via improving of national education system, creation and development of information and knowledge market; realization of effective, transparent and controlled state regulation and local government; formation of the developed ICT infrastructure of the society, expansion of ICT services; creation of the favorable environment for the provision of human rights and distribution and use of information; creation and development of legal base of information society; preservation of the national heritage. Significant state-level attention is given to adopted "The National Information Communication Technologies Strategy (2003-2012) for development", that will lead to Action Plan creation under the Cabinet of Ministers of the Republic of Azerbaijan. Provision of information need of the citizens, promotion of intellectual potential of the country, creation of the favorable conditions for the building of information society; strengthening of economic potential of the country through introduction of ICT, must be developed.

Azerbaijan's scientific-technical potential, technological achievement, educational level, are well developed and more than sufficient for building a knowledge-based society. But government allocations to science, education and ICT are not adequate enough to ensure development of this spheres, it is necessary to adopt special measures and special state-supported program aimed at considerably increasing the financing of science, including the salaries of scientific workers.

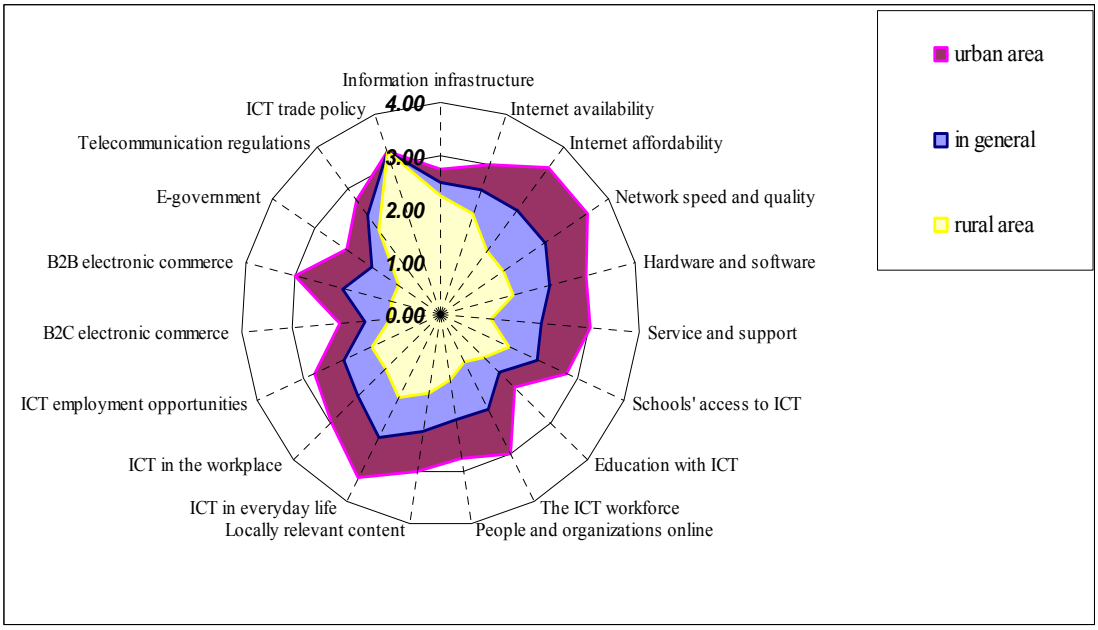
Azerbaijan is the politically and economically open country. The main tasks of National ICT Strategy include integration of the country to the world electronic information space.

However, at the present time the economy of Azerbaijan is in transition, and it is not able to support all our initiatives of local and integration order in full volume. Government can only finance the most important socially oriented projects. That is why Azerbaijan needs financial aid of international institutions and investments.

Political and economic situation in Azerbaijan are stable, investment climate is favorable. It is necessary to take into account, that considering the unique position of Azerbaijan, due to above-mentioned arguments, any large-scale projects, including projects of new knowledge-based economy, if they are carried out in Azerbaijan, simultaneously got integration aspect and become regional ones.

Annex I – Benchmarking

Indicators		Levels of advancement		
		in general	urban area	rural area
I	**Network access**			
1	Information infrastructure	2.5	2.75	2.25
2	Internet availability	2.5	3.00	2.00
3	Internet affordability	2.5	3.50	1.50
4	Network speed and quality	2.5	3.50	1.50
5	Hardware and software	2.3	3.00	1.50
6	Service and support	2.0	3.00	1.00
II	**Networked learning**			
7	Schools' access to ICT	2.1	2.75	1.50
8	Education with ICT	1.6	2.00	1.20
9	The ICT workforce	2.0	3.00	1.00
III	**Networked society**			
10	People and organizations online	2.0	2.75	1.25
11	Locally relevant content	2.3	3.00	1.50
12	ICT in everyday life	2.6	3.50	1.75
13	ICT in the workplace	2.3	3.00	1.50
IV	**Networked economy**			
14	ICT employment opportunities	1.5	2.00	1.00
15	B2C electronic commerce	2.0	3.00	1.00
16	B2B electronic commerce	1.6	2.25	1.00
17	E-government	1.5	2.00	1.00
V	**Network policy**			
18	Telecommunication regulations	2.4	2.75	2.00
19	ICT trade policy	3.3	3.25	3.25



Annex II – Knowledge-Based Economy Indicators

1. Network access

1.1. Information infrastructure

Number of mainlines per 100 person of population:

- *1998 - 9.28*
- *1999 - 9.42*
- *2000 - 10.23*
- *2001 - 10.84*

A number of telephone sets per 100 residents in Baku - 23.4.

Mobile wireless penetration (%), growth trend in 1994-2001

Year	Baksell	Azercell	Total	Growth
1994	2000	-	2000	-
1995	5000	-	5000	250%
1996	12000	2750	14750	295%
1997	18000	20371	38371	260%
1998	26000	55831	81831	213%
1999	30000	179640	209640	256%
2000	70000	380414	450414	215%
2001	120000	519346	639346	142%

Total number of mobile telephone subscribers per 1000 people

79 mobile subscribers per 1000 people

Wireless penetration (percentage of the population)

Mobile phones services are now available to 95% of the population and about 65% of the republic's territory (excluding the occupied areas).

Total number of cable TV subscribers:
N/A

Cable TV subscribers, % of households:
N/A

1.2. Internet availability

Total number of ISP providers:

- *1997 - 5*
- *1998 - 6*

- *1999 - 8*
- *2000 - 12*
- *2001 -13*

Prevailing types of ISPs' networks (microwaves/radio):

Public telephone lines, dial-up

Percentage of unsuccessful local calls:

About 5%

Is there competition among ISP providers?

Strong competition between ISPs in the capital city. However, only a few ISPs offer their services in rural areas.

What are opportunities for public Internet access (libraries, Internet-cafes, etc.)?

Last year, a rapid growth in Internet public access points was recorded. Internet-cafes remain the most common public access point. However, due to the support of international and foreign sponsors, the Internet is available for free in some public libraries. Public access points exist only in Baku and some other relatively big cities.

Are there dedicated line lease possibilities? Are there competing providers?

Dedicated line services are available from almost all ISPs. However, ISPs do not have their own network and therefore re-lease lines from the incumbent telecom operator.

1.3. Internet affordability

What are the prices of Internet access (unlimited access, per minute charge)?

Depending on the ISP, Internet access can be charged on a time and traffic basis. Usually, ISPs combine time and traffic tariffs to offer more flexible prices to their clients. Unlimited access to the Internet (unlimited time and traffic) costs from 50 to 60 US dollars. The average per hour price of dial-up access is 0.3-0.4USD/hour now.

Is it affordable for the majority (compared with average salary/income)?

ISPs offer flexible tariffs including night tariffs. The most affordable price is about 10 USD for "night tariff", i.e. unlimited access during the night (depending on the ISP "night access" may start at 00:00 - 02:00 and end from 07:00 - 08:00). Night tariffs are primarily used by students, university professors, scientists and other professionals. However, the majority of the population cannot afford full time unlimited Internet access services.

What are the rates for leasing lines?

Depending on connection speeds vary from 400 USD (64 Kbps) to 2500 USD (128 Kbps).

Are the rates affordable for small businesses or individuals?

Leased lines services are affordable only for a very limited category of the population and medium-sized businesses.

1.4. Network speed and quality

What is the percentage of successful calls?

About 95%

What is the quality of voice connection?

Normal

How many faults are reported per year for each 100 telephone mainlines?

About 2-3%

How long does it take to clear faults (48 hours, a week, month)?

Depending on the fault, from 0.5 to 12 hours

Which services are supported by local telecommunications infrastructure: e-mail, high-speed modem connection, what is the maximum speed?

E-mail, modem connection with a declared highest speed of 56, 700 kb/sec and an actual speed from 28.800 to 56.700 kb/sec.

Are there sufficient backbone facilities/networks? Even for peak demand?

Yes

What is the percentage of packet loss by the network?

About 0.03%

1.5. Hardware and software

Are there local IT hardware/software sales points?

Approximately 40 computer stores in the capital city as well as a few hardware/software sales points in provincial cities

Is the price of IT hardware/software affordable for majority/minority of citizens/businesses?

Affordable only for a small section of the population (about 15%). The majority of small and medium sized businesses can afford computer equipment.

Is there software available in local languages?

There are a few software products in the local language. Basic software products (operation systems, word processors, Internet and e-mail applications) are in English and Russian. Specific software products, such as accounting programs, legal databases onLine dictionaries and library applications exist in Azerbaijani.

Is software imported or adapted locally? (Percentage of the imported, adapted, produced locally hardware or software in total number in circulation)

Basic software products (operation systems, word processors, communication software) are imported.

Is there a broad variety/some/very few software business applications?

There are a few types of software business applications. Accounting and logistics software is the most commonly used application. Some consumer "tailored" software (databases, computer applications for industrial processes) are developed by local companies.

Are the IT software/hardware retail and wholesale markets competitive and vibrant?

There is strong competition among hardware retail companies and dealers of worldwide brands. There is also competition among local software companies for public procurement contracts and client-tailored products.

1.6. Service and support

How long is the waiting period for telephone line installment? (Total number of those on the waiting list; waiting period: days, weeks, months, years)

N/A

How long is the waiting period to repair reported telephone line problems? (Minutes, hours, days, etc.)

Depending on the problem reported, from one hour to one day

Are there software developers, web designers, network administrators and other technical personnel, and how many (working where, employed/unemployed)?

There are a number of professionals in area of software development and web design. There are fewer network administrators in the country.

2. Networked learning

2.1. Access by schools to ICTs

Are there computers in schools? How many students per computer? On which level (university/secondary/primary)?

- *Schools*

Number of schools - 3148
Number of computers in schools - 7988
Number of schools with computer labs - 834
Number of computers per school - 2.5
Number of students - 350 000
Students per computer - 14
% of schools with computer labs - 26.5%

- *State universities*

Number of universities - 20
Number of computers in universities - 1739
Number of universities with computer labs - 18
Number of computers per school - 87
Number of students - 79 000
Students per computer - 12
% of schools with computer labs - 90%

Who has access to computers (technical staff/faculty/students)?

Technical staff, faculty has free access to computers. Usually, students are provided with access to computers under the supervision of technical staff and instructors.

What is the quality of hardware (386/486/Pentium)?

Computers are generally modern (Pentium), but in many schools older computers such as 486 or 386 PCs are in use.

Are there LANs in schools? Regional WANs? National school networks?

LANs exist in 52 schools and 10 universities

Do schools have connection to the Internet? Is it dial-up or through a leased line, wireless?

31 schools in Azerbaijan have Internet access (27 schools use dial-up). 15 universities have Internet access

2.2. Enhancing education with ICTs

What is the percentage of students and teachers who use computers? (Universities/primary schools/secondary schools)

In schools 20% of students and 5-10% teachers use computers
In universities 70% of students and 20% teachers use computers

What are the computers used for? What is the level of computer literacy/skills?

In universities, computers are mainly used for training students in computer literacy. In universities with well-equipped computer labs students may use computers for Internet and/or database access.

What is the level of information and communication technologies integration in the curriculum?

Middle

2.3. Developing the ICT workforce

Are there training opportunities for programming, maintenance, and support?

All types of training opportunities exist in Azerbaijan.

Who is offering them (Public/private centers)?

State and private universities, several regional information and education centers created with the support of international organizations

Are they affordable for majority/minority of the population?

Some state universities and regional information–education centers provide free training to faculty students admitted on comparative basis. Private centers offer computer literacy courses that are affordable for the majority of the population.

Is on-line training available?

Azerbaijan State Economic University, Khazar University, Western University, Kavkaz Universit provide on-line training courses

Do employers offer training?

Only a few employers offer training to their staff

3. Networked Society

3.1. People and organizations online

What percentage of the population: - is aware of the existence of the Internet?

According to different sources, between 40% and 60% of the population is aware of the Internet.

- has used the Internet recently?

N/A

- uses the Internet regularly?

According to different sources, between 3% and 5% of the population use the Internet regularly

What is the structure of users by gender, age, social and educational status?

There are no official statistics on the structure of users. However, according to Azerbaijani ISPs, the largest user group includes young people. So predominant users (36.1%) of Internet were between 18-25 years old. The second range (27.8%) was between 14-18

What is the number of locally registered domain names (per 1000 people)?

N/A

Is there advertising for online companies, and how common is it?

In spite of the fact that many Azerbaijani companies have web sites, online advertising is not properly developed in the country. An Internet banner network was created but is not actively used.

3.2. Locally relevant content

Are there (and how many: no, few, some, many) web-sites:

There are no official statistics on the number of websites but number of websites significantly increased in 2000-2002.

- Providing local topics?

Most of the websites registered in the AZ zone provide local topics (news, company/organization information, entertainment, cultural and educational content).

- In local languages?

Many websites are in two or three languages (Azerbaijani, Russian, English)

How often are they updated and is content static or dynamic?

The majority of websites are regularly updated

Are the above websites created in the community?

Yes

Are bulletin board systems, Usenet groups, newsletters, and/or listservs in use?

There are many newsletters distributed for free. Usenet groups and listservs are in use, but not on a large scale.

Are there opportunities for Web-related training?

There are many web design and publishing training centers in the capital, but very few exist in the provinces. Centers offer web training primarily on a commercial basis, but there are some donor-supported initiatives offering free training.

3.3. ICTs in everyday life

Does the population include information and communication technologies (phones, faxes, pagers, computers) in everyday life?

Phones and mobile phones are widely used in everyday life. Computers are used by a limited section of the population due to the high cost of computer equipment (According to different sources the number of PCs per 100 person is 1.5).

Are there phones, wireless phones, digital assistants, pagers, PCs and are they being used regularly? Are they used for household commerce (banking, online shopping, investing) and social and commercial interaction (bartering, online chat and etc.)

Phones and mobile phones are widely used by the majority of population. Phone use in villages is limited due to insufficient number of telephones. Pagers are not widely used.

Telecommunications are not widely used for household commerce due to the absence of efficient electronic payment systems.

Are there PCs with e-mail capability available (cyber cafes, telecenters) and are they being widely used?

There are many Internet cafes in the capital city, Baku. They are widely used, primarily by young people.

3.4. ICTs in the workplace

Do employees have: - (Un)limited access to phones?

Yes, in most cases

- Personal e-mail accounts?

Some government employees have personal e-mail accounts. Employees of oil companies, consulting firms, banks, and other intellectual businesses also usually have e-mail accounts. Only a few employees of large trade and service companies would have personal accounts.

- Internet access from personal workstations?

Employees of oil companies, consulting firms, banks, other intellectual businesses usually have free access to Internet. Many office clerks employed by large trade and service companies have Internet access from personal workstations.

- E-mail and web addresses on business cards?

The majority of government officials and employees of large companies have e-mail address on business cards.

What percentage of businesses and government offices have computers, how many of them, how many employees use them?

There are no precise statistics about the penetration of computers into business. However, normally if there are computers in an office they can be accessed by the majority of staff members. According to some sources the number of computerized workplaces in governmental organizations is 8.2% .The number of computerized workplaces with access to Internet is 4.5%

Are they networked?

Computers are networked in a few business offices. Computer networks usually exist only in large companies. Government offices usually have computer networks (ministries and agencies).

Is business mostly conducted in person or bye-mail, or is there data-sharing, enterprise, reporting, transaction, and research applications? How intensively are they used?

The majority of Azerbaijani businesses communicate in a traditional way: face-to- face, by fax, or by phone. Data-sharing, reporting and research applications are used in a few advanced business and governmental offices.

Are there efficiency gains resulting from the use of ICT systems?

Yes

4. Networked economy

4.1. ICT employment opportunities

Are there opportunities for technically skilled workers within the country?

There are limited opportunities for technically skilled workers in Azerbaijan. However, some professionals, such as programmers, are in great demand.

Are companies from outside of the country investing in IT related projects?

During the period 2000-2001 a number of us companies opened branches in Azerbaijan employing about 200 programmers.

In communication sphere, foreign investments to joint ventures are (million USD):

- *1998 - 42.8*
- *1999 - 54.8*
- *2000 - 72.1*

What is the proportion of knowledge-workers and information-related businesses in the economy? (Percentage of labour force, percentage of GDP)?

N/A

Are businesses considering IT in their strategies?

A lot of large businesses in Azerbaijan are considering IT in their strategies

4.2. B2C electronic commerce

Do local businesses have websites and how many? Is content current or static?

According to different online catalogues, the number of company websites varies from 200 and 300. The majority of online business resources are relatively static (updated once a month or less).

Are there online B2C transactions, or are transactions mainly oral and/or paper-based, phone or fix-based?

There are no B2C transactions in Azerbaijan. Some companies offer online catalogues, but the transactions are made by phone/fax or in writing.

Is online retail a noticeable component of overall commercial activity?

No

4.3. B2B electronic commerce

What are the sources of market information and are they sufficient for providing transparency?

There are some sources for marketing information, but not sufficient to carry out significant market research.

Are there online B2B transactions, or are transactions mainly oral, paper-based, phone or fax-based?

There are no B2B transactions in Azerbaijan. The majority of transactions between companies are made on paper or by fax.

Can transactions be conducted online without paper documents? Is the process automated? Does it allow online tracking, monitoring?

N/A

What portion of B2B activity is conducted on line? Is there gain in efficiency?

N/A

4.4. E-Government

Number of government resources online? Do they include information, hours of operation, any services? Is information current and relevant?

There are a few online government resources. Those resources include official web sites of the President of Azerbaijan, National Parliament (Milli Mejlis) Ministry of Economy Development, State Statistics Committee and etc., (about 30 state organizations) All of these sites contain mission statements and at least a general description of the responsibilities and

structure of the relevant state institution. As a rule, there is no information provided on operation hours, specific responsibilities of departments/officials or other similar content present on government sites. Only some agencies regularly update their websites. Some websites contain document templates and service rules procedures.

Is there online interaction between government and citizens, or is interaction mainly oral, paper-based, phone or fax-based?

There is no online interaction between the government and citizens. Usually, citizens communicate with government official by phone or in writing.

Is there online interaction between government and suppliers and contractors, or is the interaction mainly oral, paper-based, phone or fax-based?

Communication between contractors/ suppliers is normally oral or paper-based and; less frequently, fax-based.

Is it possible to download applications from the websites?

At the moment this type of service is offered by few governmental organizations, such type the Ministry of Taxes. Some organizations are planning to start an online publication of application forms.

Can citizens apply for permits, licenses, and taxes on line?

No, these services do not exist in Azerbaijan.

5. Network Policy

5.1. Telecommunications regulation

Is liberalization of the telecommunications sector planned or implemented?

Liberalization and privatization of the telecommunications sector is planned since 2003

Is there competition between telecommunications service providers?

Competition exists between Internet Service Providers, cellular services operators.

Is broadband Internet access offered?

Yes, wireless broadband Internet access offered by several ISP

Is regulation set and enforced by an independent body?

No, at present the telecommunication market is regulated by the Ministry of Communication

5.2. ICT trade policy

Do tariffs or other restrictions (technical standards, domestic regulation, etc.) exist?

Telecommunications tariffs are provided on an exclusive basis. They are regulated by law and are subject to government approval.

Are there restrictions in the service (including information services) sector?

There are no restrictions for business activities in Azerbaijan. However, production of some types of services/products is subject to licensing.

Are there disproportional taxes on electronically delivered services?

According to Azerbaijani tax legislation all businesses are taxed at the same rate. No tax benefits are prescribed for a particular type of business activities, including electronic commerce and electronically paid services.

Is Foreign Direct Investment in IT sector existent, and is it encouraged, discouraged, restricted?

Yes. See 4.1

6. Media

6.1. Radio, TV and newspapers

Number of radio and TV stations, newspapers

Over 600 registered newspapers, 110 journals, 25 agencies, 8 TV and 30 radio.
2 state and 4 private large TV stations in Baku, some small TV stations in regions.
2 state radio and 28 private radio stations.

The size of audience/circulation.

The size of audience of state TV is 100%.
The size of audience of state radio is 100% .
The size of audience of private TV and radio is from 40% to 80%.

6.2. Employment in the media

Number of employees in the media

N/A

Trend: is the number increasing/decreasing?

N/A

7. Intellectual Capital

7.1. Patents

What is the number issued per annum?

Azerbaijan has adhered to the following Conventions, Treaties and Agreements, which entered into force since 25 December 1995:

1. *Convention Establishing The World Intellectual Property Organization (1967)*
2. *Paris Convention for the Protection of Industrial Property (1883)*
3. *Patent Cooperation Treaty (1970)*
4. *Madrid Agreement Concerning the International Registration of Marks (1891)*
5. *Eurasian Patent Convention (1995).*

Since 27 December 2001, a new organization named as "State Agency on Standard, Metrology and Patents" used to be responsible for implementing state policy on protection of industrial property (inventions, utility models, industrial design, trademarks and geographical indication).

The forms of protection of the industrial property are the patents for the inventions utility models and industrial designs, with which in frameworks the special complex Law "On patents" of the Azerbaijan Republic that has entered valid in August 2, 1997, the right protection in territory of Azerbaijan is given.

What are the trends?

Dynamics of granting patents on invention the following:

1995 - 31; 1996 - 82,. 1997 - 79; 1998 - 96; 1999 - 234; 2000 - 275; 2001 - 168. During the period 1995-2001, 965 patents for inventions have been granted, including 87% to national applicants and 13% to foreign applicants.

The greatest numbers of applications for invention are filled by applicants on section "C" (Chemistry, Metallurgy) and section "A" (Human Necessities). Section "0" (Textiles, Paper) appears to be the least popular section among applicants.

From the data given in the table the number of the submitted applications on the inventions is visible, that on the part of the national applicants after coming into force of the new law is rather stable (more than 200 applications per year).

Applications for industrial designs filed during the period 1992-2001 are - 76 (national applicants - 35, foreign applicants - 41).

Applications for utility model filed during the period 1998-2001 are - 6.

Commission of Appeal of The State Agency on Standard, Metrology and Patents during the period 1997-1999 considered 13 disputes concerning to inventions and 12 of them have been solved and expertise decision has been abolished.

7.2. Copyrights

What is the number issued per annum?

N/A

What are the trends?

N/A

7.3. Licenses

What is the number issued per annum?

The total number of license contracts for inventions registered during the period 1996-2001 amounted to 45. While 80% of them belong to oil sector. In all license contracts for inventions registered both contracting parties are national persons.

The total number of license contracts for trademarks during the period 1996-2001 are12.

As a rule, the license contracts are concluded for all goods and services for which a trademark is registered.

What are the trends?

N/A

7.4. Trademarks

What is the number issued per annum?

The basic document regulating the legal relations concerning trademarks and the geographical indications in the Republic of Azerbaijan, is the Law "On trademarks and geographical indications" of the Republic of Azerbaijan, which has come into force on 28 August 1998.

In total was registered - 8465 trademarks. 14729 trademarks are in power in the territory of Azerbaijan Republic according to Madrid Agreement, which is about the registration of international marks (the data are given for the period 1996 for 2001). On 274 registered marks in the International bureau with the indication of Republic of Azerbaijan the decision on refusal in legal action of their international registration in territory of Republic of Azerbaijan was born.

Contracts on assignment to trademarks have been registered 89 in the year of 2000, while 71 trademarks have been registered in 2001.

The Commission of Appeal during the period of 2000-2001 considered 71 oppositions concerning to trademarks. By the results of examination of oppositions the Commission of Appeals passed 59 decisions on trademarks. The Commission of Appeal admits the decisions on in valued the registration of 6 trademarks and on 5 oppositions were admit refuse

decisions. More than 80% of appeals against decisions in order to refuse the legal protection to trademarks submitted by foreign persons.

What are the trends?

Dynamics of registrations of trademarks: 1994 - 27; 1995 - 792; 1996 - 250; 1997-1892; 1998- 2152; 1999 - 1581; 2000 - 1236; 2001 - 535.

7.5. Scientific and/or technical associations

Azerbaijan Research Educational Network Association - AzRENA

In 1995, a network of Academician institutes was created in Azerbaijan. It was the only non-commercial network in Azerbaijan Republic connecting the major government organizations, institutions and academician institutes.

From 1995 to 2000, the academician network connected all the main buildings of the academy via fiber-optic and leased lines. The central node of the academy had the leased line 64kbps to the local ISP.

In August of 2000, the National Academy of Sciences and leading universities of Azerbaijan founded on the basis of the Academician network Azerbaijan Research Educational Network Association - AzRENA. This Association is non-governmental organization.

8. Education

8.1. Higher education

Total number of higher education establishments (Public/private).

Public -20; private - 15

Total number of students (total average per annum, in both the private and public sectors)

State sector - 99000, private sector - 21500

Prevailing specializations. (distribution of students among the fields)

In state sector prevailing specializations are as follows:

- Economics	*- 15100 students*
- Health, physical training and sport	*- 10800 students*
- Education	*- 42200 students*
- Transport and communication	*- 1900 students*
- Arts and cinema	*- 2900 students*
- Industry and construction	*- 234200 students*
- Agriculture	*- 2700 students*

In private sector prevailing specializations are as follows:

- Economics	*- 6500 students*
- Education	*- 15000 students*

Cumulative number of population with higher education degrees (total in the fields of both science and technology)

Degrees in science field (2001) have 9723 persons.

8.2. Distant learning

Distant learning facilities

In 200,1 for the first time the faculty of "Improving qualification and retraining" with distance form of education was created at the Azerbaijan State Economic University. Khazar University in cooperation with Western University and IREX initiates a distance-learning course on International Negotiations. Caucus University works to foster development of wireless communication among high schools. The teachers involved in the project are currently developing several distance learning courses in some regions of Azerbaijan.

Number of students trained per center

About 50 students per each university

9. Labor Force

9.1. Employment in science and technical fields

Number of employees and trends in the fields

According to official statistics in 1998, the number of people employed in the field of science is 31200 (0.8% of the total working population)

Compensation rates in the fields (average salaries)

Average salary in the field of science is 183 240 manats or about 46 USD (1998)

9.2. Employment in the electronics industry

Number of employees and trends in the fields

No official or other statistics concerning the number of people employed in the electronics industry. For industry, the general number of employees is 251 100 (1998) or 6.8% of the total working population.

Compensation rates and trends in the fields

Average salary in the electronics industry is 277049 manats (1998) or 61 USD.

9.3. Employment in telecom industry

Number of employees and trends in the fields

Total number of employees in communication sphere - approximately 22000 (1998).

Compensation rates and trends in the fields

Average salary in the field of communication is 263 576 manats (1998) or 66 USD

10. Research and development

10.1. Research institutions

Number of research institutions

96 research institutions currently operating in Azerbaijan.

10.2. Investments in research and development

The total amount

N/A

Government and private business breakdown of total investment in research and development

Governmental investment in scientific research and development – 89 546 million manats or about 18 million USD (2003)

11. Other issues

Annex III - The Decree of the President of the Republic of Azerbaijan

The Decree of the President of the Republic of Azerbaijan on "The Adoption of National ICT Strategy (2003-2012) for development of the Republic of Azerbaijan"

Taking into consideration the importance of "National Information Communication Technologies Strategy (2003-2012) for development of the Republic of Azerbaijan" jointly developed by United Nations Development Programme in accordance with the decree of the President of the Republic of Azerbaijan, № 865, 9 January 2002, and approved by national and international organizations, for the Azerbaijan Republic, I decree:

1. *"The National Information Communication Technologies Strategy (2003-2012) for development" is to be adopted.*
2. *The Cabinet of Ministers of the Republic of Azerbaijan is due to address all the issues in this regard.*

Heydar Aliyev
The President of the Republic of Azerbaijan
Baku, 17 February 2003

Annex IV – Box 1: National Normative Acts & International Treaties of the Republic of Azerbaijan

 The Decree of the Cabinet of Ministers of the Azerbaijan Republic on the Statute of the Ministry of Communications of the Azerbaijan Republic, 04.04.1994;
 Law on Communications, dated 20.06.97;
 Law on Creation of the Azerbaijan Republic State Commission "On Radio Frequency", dated 15.08.96;
 Resolution of the Cabinet of Ministers of the Azerbaijan Republic № 136 "On approval of the Provision of the Azerbaijan State Commission on radio frequency", dated 03.10.96;
 Resolution of the Cabinet of Ministers of the Azerbaijan Republic № 138 «On approval of the protection of the means and devices of communication of the Azerbaijan Republic" dated 19.12.97;
 Resolution of the Cabinet of Ministers № 90 "On approval of the Rules on Use of transport means for post service of the Azerbaijan Republic", dated 20.04.1998;
 Resolution of the Cabinet of Ministers № 175 "On approval of the rules of certification of the communication means of the Azerbaijan Republic", dated 21.08.1998;
 Law of the Azerbaijan Republic "On approval of the treaty on cooperation in the development of cellular-mobile systems and their use", dated 30.03.1999;
 The Order of the Ministry of Communications on rules of the utilization of general communications network, 31.08.99;
 Law on Mass Media, dated 08.02.2000;
 Law of the Azerbaijan Republic "On annexation to the Charter and Constitution of International Telecommunications and correction documents", dated 14.03.2000;
 Law on Information, Informatization and protection of information, dated 03.04.1998;
 Law of Azerbaijan Republic on approval of treaty "On cooperation in the field of Governmental communication" between the Government of the Azerbaijan Republic and Ukraine Cabinet of Ministers, dated 24.04.2000;
 Law of Azerbaijan Republic "On annexation to Provision for establishment of the Conference of the European Post and Telecommunication Administrations and fixed procedure rules", dated 02.05.2000;
 Code on Administrative infringements, dated 01.09.2000;
 On joining of the Azerbaijan Republic to the Provision for establishment of the European Post and Telecommunication Administrations, adopted on 7.09.1992 and to the procedure rules of mentioned Conference, adopted on 6.09.1995;
 Decree of the Azerbaijan Republic President № 389 o issues of approval, came into effect and regulation in connection with this Code of administrative infringements, dated 29.09.2000;
 Resolution of the Cabinet of Ministers "On conduction of the measures, proceeding from the provisions of the treaties, signed between the Government of the Azerbaijan Republic and Government of the Russian Federation in Baku on 9.01.2001, resolution dated 07.02.2001;
 Decree of the Azerbaijan Republic President "On maintenance of performance of the Law on the information, informatization and protection of the information " dated 4.07.2001;
 Decree of the Azerbaijan Republic President dated 16.03.2001 "On conduction of the state regulation of the modern communication services in Azerbaijan";
 Agreement between the Azerbaijan Republic and Uzbekistan on Cooperation in communications and telecommunications sphere, 25.07.97;
 Agreement between the Azerbaijan Republic and Kazakhstan on cooperation in communications sphere, 01.02.99;
 The CIS Agreement on the cooperation, development and utilization of systems of cellular mobile communication, 30.03.99;

 The Agreement between the Government of the Azerbaijan Republic and the Cabinet of Ministers of Ukraine on Cooperation in the sphere of government communication, 24.03.00;
 The Protocol on corrective action in the Agreement on Cooperation in development and utilization of systems of cellular mobile communication, 24.10.00;
 The Law of the Azerbaijan Republic on Corrective and Supplementary actions to communications, operating and searching activities, 17.05.2002;
 Decree of the President of the Azerbaijan Republic "On privatization of some enterprises and establishments under the Ministry of Communications of the Republic of Azerbaijan", 29.03.01;
 Resolution of the Cabinet of Ministers dated 4 august 2001 № 143 on implementation President's decree "On maintenance of performance of the Law on the information, informatization and protection of the information" dated 4.07/.2001;
 The Decree of the Cabinet of Ministers of the Azerbaijan Republic "On Establishment of Tariff(Price) Board" and the Statute of Tariff(Price) Board of the Republic of Azerbaijan, 31.01.02;
 The State Programme on Development of small and medium sized entrepreneurship. (The Presidential Decree dated 17.08.2002) Paragraph 4.2 To provide the assistance to SME in the sphere of "Internet business" services
 Decree of the President of the Azerbaijan Republic dated 2.09.2002 'Rules for Issuance of Special Permission (License) on Some Types of Activities in Azerbaijan Republic', and 'List of Types of Activity that Require Special Permission (License) and of Organs of Executive Authority that Issue;
 Resolution of Council on Tariffs (prices) "On payment of services long-distance, international, rural telephone and radio communications " dated 12.12.2002.

Source: Ministry of communication of Azerbaijan Republic