ICT technologies in the agrarian sector of Georgia

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1. Brief description of country:

Georgia is a unitarian republic in Eurasia, located in the eastern shore of the Black Sea, in Southern Caucasus. Total area is 69,700 km^2, the population is 4,7 million. Georgia is mountainous country, with 92% of the territory covered by mountains and foothill areas. The highest mountain is Shkhara peak (5201 m), the height of Kazbeghi ice peak is 5047 m. The biggest rivers are – Mtkvari (Koura) and Rioni. Blend of alpine zone of Caucasus and subtropical of the Black Sea seaside, volcanic plateau Djavakheti, lakes, beautiful sea and ski resorts, impressive views, mineral and thermal spas, numerous monasteries and temples attract numerous tourists. Thanks to the diverse landscape ranging from humid seashore subtropics to snowy mountains, Georgia allows experience of all four seasons of year in very short span of time.

Georgia emerged in the place of two ancient states, Kolkhida and Iberia. Georgians is an ancient transcaucasian nation originating to the ancient Georgian tribes. In the 1 Century A.D., during the reign of King Mirian the country accepted the Christianity which became the official religion. Georgian kingdom reached its development peak in the 12^{th}-13^{th} century BC. This time was called the Golden Age of renaissance.

From 1801 and up to the Russian October Revolution of 1917, Georgia was a part of Russia. After the revolution and until 1922 the newly independent country was ruled by "menshevik" government. In 1922, after the overthrow of the local government by Soviet Armenian Republic, the country was included into the USSR. From 1990 Georgia is an independent state.

Georgia is comprised of 9 administrative regions, 2 Autonomous Republics and 1 province. The capital of Tbilisi, one of the most ancient cities in the world, dating some 1500 years back into history, is well known for its sulfuric thermal spas. Surrounded by the mountains, the valley of river Mtkvari holds evidence of unique national culture. There are many historical and cultural monuments, including Narikala fortress, Anchiskhati Church, Sioni Temple holding the St. Nino Cross, one of the most valuable and sacred artifacts in Georgia; a recently built magnificent Sameba Temple, etc. Georgian mineral water brand "Borjomi" is also very well known.

The second largest city is Kutaisi, holding the Bagrati Temple, Gelati, a 12^{th} century cultural centre with famous Gelati Academy, dinosaur plateau, the Sataplia cave near the Tskhaltubo resort.

Adjaria is a beautiful Georgian region located on the shore of the Black Sea. Its capital, Batumi, houses the National Botanical Garden containing more than 5 thousand subtropical plants.

-President Michael Saakshvili
-Internet TLD .ge
Country code +995

2. Agriculture of Georgia

Georgia traditionally has well-developed livestock and plant production. The country is characterized by its complex landscape and diversity of soil conditions. The country is divided into 13 zones, each with specialized agriculture oriented at viticulture, horticulture, fodder production, livestock production, suburban agriculture, tea growing, subtropical

crops and tobacco production. The major industries are viticulture, tea and fruit (especially citrus) production. Vines and wheat are of especial interest, as Georgia is considered to be the origin of vines. Scientists believe that Transcaucasia is the place of origin of wheat; some 12 species and 30 subspecies of wheat, of which two, Makha and Zanduri, are found only in Georgia.

An agrarian reform was undertaken in the country. Land privatization begun in 1992; 67% of arable land was distributed free of charge, with rights to sell or buy, and certain part was transferred under long-term contracts of rent. Privatization was started without proper preparation of methodological and legal basis which caused certain problems. As a result, the arable land was divided into small plots with low intensity. Average plot size does not exceed 1 ha.

Currently, there are annual crops, like legumes, cereals, oil crops and vegetable crops grown in the country. Of perennial crops, tea is grown. Viticulture is under development, assisted by the World Bank grant of USD 2,8 million. Recently, farmers were especially interested in production of red wine and growing vines of appropriate varieties (Saperavi, Khvanchkara, Odjaleshi, Kindzmarauli) as well as cultivation of hazelnut. Horticulture and citrus production is also being developed.

Most (95%) of cattle is kept in the farmers households; there are relatively large commercial farms (80-150 heads), yet these are not much different from households, requiring technological innovation. Sheep and pork production is practiced only by farmers and farmers' households. Poultry production is practiced by farmer's households and farms. There are several poultry farms producing poultry meat and eggs at industrial scale. Bee farming and fish farming are also being developed.

There are various agricultural projects being implemented in the country: «Rural development project», «Irrigation and drainage development project», «Swedish Dairy Production Assistance Program», Agricultural research, extension and training. There is a Agribusiness development project implemented under «Millenium» Foundation. Dutch grant was used to create highly productive farm reproducing Goldstain breed. Under the EC TACIS program, a program on breed improvement is undertaken in three regions of the country, etc.

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3. Brief description:

A. Current status of telecommunications in country

The process of globalization that is underway in the country facilitated the spread of innovation technology, which was followed by development of information and communication technologies (ICT). One of the foundations for revival of agrarian industries in Georgia is, namely, development of ICT.

Based on the decree №456 of the President of Georgia, ICT infrastructure formation and its proper usage will be an important instrument of development of national economy. The government has developed several decrees and resolutions necessary to create the environment needed to facilitate the national strategy on ICT.

It is known that the ICT includes radio, TV, the press, telephone, fax, computer equipment and Internet.

Georgia has a well-developed network of radio and TV broadcasting covering almost the entire region and including 17 radio stations (2,4 million audience) and 45 TV stations (3,6 million audience). The major Georgia TV companies are: «Public telecasting of Georgia», «Telecasting of Adjaria», «Second Channel», «Rustavi-2», «Mze», «Imedi», «Pirveli stereo», «Caucasia». There are operational cable TV stations; satellite TV is also developing gradually. However, they are almost not used to highlight issues related to

agriculture and rural development, to broadcast he information interesting to farmers. Radio stations «Mtsvane taga» (Green wave) and local radio centers: «Atinati», «Dzveli kalaki», «Harmony», «Gereti» could be identified as, to certain extent, covering these issues as well as the issue of environmental protection, disseminate the agriculture-related information between the population and farmers in the area covered by broadcasting.

Georgia is covered by the fixed telephone lines, most of which are outdated. Relevant telephony stations and technologies are outdated too, increasing maintenance cost and service prices, which poses a constraint to development of Dial-up and DSL Internet. Thus, private companies ("Akhali Kselebi"/"Akhteli") started to introduce modern telephony based on the new technologies, providing a diverse range of services.

B. Telecommunication and Agricultural policies

There is rapid development of Internet-related sector, being a component of the government's ICT strategy. Internet services in Georgia are provided by 12 companies. Up to 80% of Internet communications is provided by the major companies: «Sanet», «Georgia-online», «Caucasia», «Global-1», «Geonet». Fiber optics and radio-modems are already being used for Internet, providing high connection speed.

The number of PCs in Georgia has exceeded 150000. Most of them (over 90%) are based on Pentium CPU, mostly, P-3 and P-4. Only small part is Mac systems.

Internet users in the country comprise 5% of the population. However, Georgian Internet technologies market is developing rapidly, the number of companies importing and selling computer equipment, accessories, or provide computer-related services, grows. There are web-site developing companies and firms with powerful servers (PROSERVICE company and others). Among these websites there are portals allowing businesses to manage their operations, increase market activity, buy or sell, etc. This allowed Internet – based activity of various companies and firms to grow almost by 100% in the last year.

GREENNET company is satisfying the increasing demand in high-quality network and telecommunication solutions by installing and upgrading local area networks and developing wireless networks with coverage distance of 40 km. The same company is designing IP telephony services which allows combining telephone and data transmissions in one network. Their Voice over IP solutions cover entire range of project implementation.

Usage of computer equipment and Internet is constrained by the lack of literacy in foreign languages: the pre-installed or separately distributed software in the country is either in English or Russian language.

In the recent years, Georgian programmers developed accountancy and financial software in Georgian language that are used extensively in companies, big firms and organizations. The famous search engine "GOOGLE" is available in the local language. There is a full-scale Georgian search engine, "BOOM" (www.boom.ge, by "Proservice"), which is undertaking full indexing of Georgian Internet domain space. There are also other Georgian Internet-based software developed. In the previous year, localized Georgian version of WINDOWS XP became available. It is possible to access Internet in some libraries, Internet clubs or Internet café.

More than 30 organizations, firms and private schools training courses provide training courses in computers, software development and ICT. Most of them are located in Tbilisi. In the recent years, a wide-scale computerization of schools nation-wide is performed under the governmental program «Deer Leap».

C. Telecommunications development strategy for rural areas related to the Internet, Cellular telephone, Radio and TV

Up to recently, Georgian agricultural development was using the old methods. Farmers' interest towards ICT was insignificant, which is due to various factors, mostly, lack of information, problems with telecommunication infrastructure and economic factors. Gradually, the picture is changing, and farmers and agrarian scientists become more interested in ICT.

In order to exchange information and personal contacts, mostly, regular telephones or fax lines are used, as well as mobile phones or hard media. E-mail is used by agricultural firms and agrarian institutes to contact foreign and local partners.

In the agricultural sector, Internet is available mostly to organizations, institutes and representatives of large and medium enterprises. Of 60% population living in 10 region of Georgia, only a small part is using Internet. Some 80% of web pages found in the web are in English which does not allow non-English speakers to get the information. Only part of Russian-speaking population can use translation software.

D. Current status of Agricultural extension and Rural development Information services

Distribution of information, various recommendations, methodologies, etc. in the agrarian sector is performed by the Ministry of Agriculture and Food, the Centre of Scientific and Technical Information TECHINFORM, the Academy of Agricultural Sciences of Georgia, the industry-wide SRIs, the Farmers' Union of Georgia, NGO «ELKANA», the House of Georgian Farmers. According to the Georgian agricultural development project, "AgVANTAGE", a modern information system was developed for the agroindustrial market, enabling the access to a lot of technological and market-related information to all farmers interested. The system includes: 1. A professional, high-printed-quality monthly magazine, «Agroinfo»; 2. Weekly information bulletin in Russian and Georgian; 3. Web-portal, www.agroinfo.ge, featuring a web technology-based database; 4. Information available as short text messages.

The Farmers' Union is producing a monthly newspaper «My Fatherland», highlighting foreign and local achievements and providing theoretical and practical advise to the farmers; It is also funding publication of up to 20 books and booklets. The Association for Protection of the Rights of Land Owners is publishing a magazine «Land owner», discussing legal issues.

The Farmers' Union has created Information-Consultancy centre having highly proficient specialists. There is also a "hot" telephone line organized. The Centre services 100-150 farmers a day.

Activities of the TECHINFORM include development and updating of information portal "Agro Web Georgia". In the TECHINFORM there is a FAO depository library, holding statistics, reference and guideline information of FAO, as hard copies and on CDs. TECHINFORM is publishing abstract journals as hard copies and electronically, with possibility to search information in the foreign databases.

ICT will play a major role in development of agromarketing. The aromarketing system includes the existing tools of exchange of marketing information. Effective transfer and exchange of information in agromarketing is based on the quality of application of ICT.

The level of ICT development depends on the agrarian policy. Agrarian policy for the country is defined by the Ministry of Agriculture and Food, Academy of Agricultural Sciences, the "Information and Consultancy Council" of the Farmers' Union. Each year elaboration of recommendations on agricultural policy for private sector, farmers' business

plans and agrarian projects is undertaken, and seminars, lectures and conferences are organized.

Human factor and education plays important role in the effective usage of ICT. In Georgia, higher agrarian education and personnel training is performed by Georgian Agricultural University (GAU), which was recently by the Georgian Zooveterinary Institute, Georgian Subtropical Institute (GSI), Agricultural Institute of Batumi and GAU branches in Telavi and Marneuli.

In the last year, the country education system was reformed, which resulted in the change of the structure of education institutes and universities. Two-level student education system was accepted: in the first level (four years), the bachelors are trained, and then masters are trained in the second level (two years), after which a master may apply for doctorate. Besides, former technical schools that trained multifunctional workers, have been transformed into colleges (total 14). In the institutes, students are trained in information technology as well.

Since 2002 the World Bank is facilitating implementation of the Project of "Agricultural research, introduction-extension and training", aimed at increase of the level of technical equipment of farmers' household. An institutional reform was undertaken in the country to address this issue.

Since the last year, the government undertakes national presidential program "Information and communication provision of farmers and agro-entrepreneurs". The program will supply farmers with necessary information and introduce a modern information and consultancy system.

Scientific provision of farmers, firms and rural organizations is performed by Georgian Academy of Agricultural Sciences (GAAS) and appropriate industry-wide SRIs (in total, 15), as well as GAU, GSI and Farmers' Union.

Advanced experience on computer databases was accumulated by GAU and the Institute of Horticulture, Viticulture and Wine making (IHVW), that purchased state-of-the art equipment in the last year, funded by the grant. GAU has a functional computer lab, computer training courses and independent training and consultancy centre of information technology. Over 60 computers are linked into a LAN with access to Internet via a radiomodem. In IHVW, up to 40 computers of P-4 type are linked into a LAN with access to Internet. Here, special 6-month training courses were organized to train the staff in English and information technology. GAAS has 8 computers, 6 printers, 2 scanners and 2 copiers. 6 computers are linked into a LAN with access to Internet. There are good computers in the SRI of Mechanization and Electrification of Agriculture and ELKANA company.

Usage of computer equipment in the research is still not at sufficient level. Only few organizations (such as TECHINFORMI, ELKANA, etc.) use computer equipment intensively in their work.

4. Issues and problems in using ICT enabled information systems

At the current stage, the problem remains in building farmers' awareness of the scientific achievements and their introduction in the farms. Up to now, there is no structure mechanism that would facilitate integration of agrarian science and farmers' structures.

The major factors constraining development of ICT is financial problems and poor equipment.

5. Needs for Information and Communication management

Besides, it is important to organize TV broadcasts to highlight problems relevant to the agriculture, attracting qualified specialists.

In order to engage internet more effectively, it is necessary to increase the number of websites in Georgian language that would highlight agricultural information and technologies.

National
Agricultural Information System (RAIS) Kazakhstan

S. Erzhanova
Scientific Production Center
of Crop Husbundry and Plant Industry

Brief country profile.

Kazakhstan is located in Central Asia, deep in the Eurasia continent. Its area is **2724,9** sq. km. It has common borders with: PRC, Kyrgyzstan, Turkmenistan, Uzbekistan and Russia. Total border length is 12187 km. The climate is sharply continental.

Kazakhstan has 8,5 thousand rivers, 48 thousand lakes. 26% of the territory is covered by steppes, **172 million hectares** is in deserts (44%) and semi-deserts (14%), 21 million hectares are under forests. Kazakhstan has a wide range of mineral resources. Out of 105 chemical elements of periodic table, 99 were found in Kazakhstan.

Population is **15,074,200**. Population density is 5,5 persons per sq. km. Transport and communication complex includes railroad, air, sea and river, as well as pipeline-based transport, a network of motor roads and telecom systems. The total length is 14.5 thousand km.

Economy. Kazakhstan has an operational market economy. The major source of economic growth of the country is its raw production potential. Investors believe that today Kazakhstan is a reliable partner that guarantees the stability and mutually beneficial cooperation.

The capital is **Astana** (since 10 December, 1997). Population is 600 thousand.

Brief description of agriculture

Agriculture is at the beginning of a new stage of development in the conditions of an open economy. Food and agriculture trading system covers the whole world. An important component of sustainable development is formation and implementation of cluster initiatives in the most competitive branches of agriculture, which would lead to higher level of agrotechnologies and the quality of manufactured products, increase of the added value and incomes in the agro industry complex, as indicated in the:

- Concept of sustainable development of agro industry complex of the Republic of Kazakhstan for 2006-2010.
- Government agro-food program of the Republic of Kazahstan

Milestones in the Country's Agricultural Science

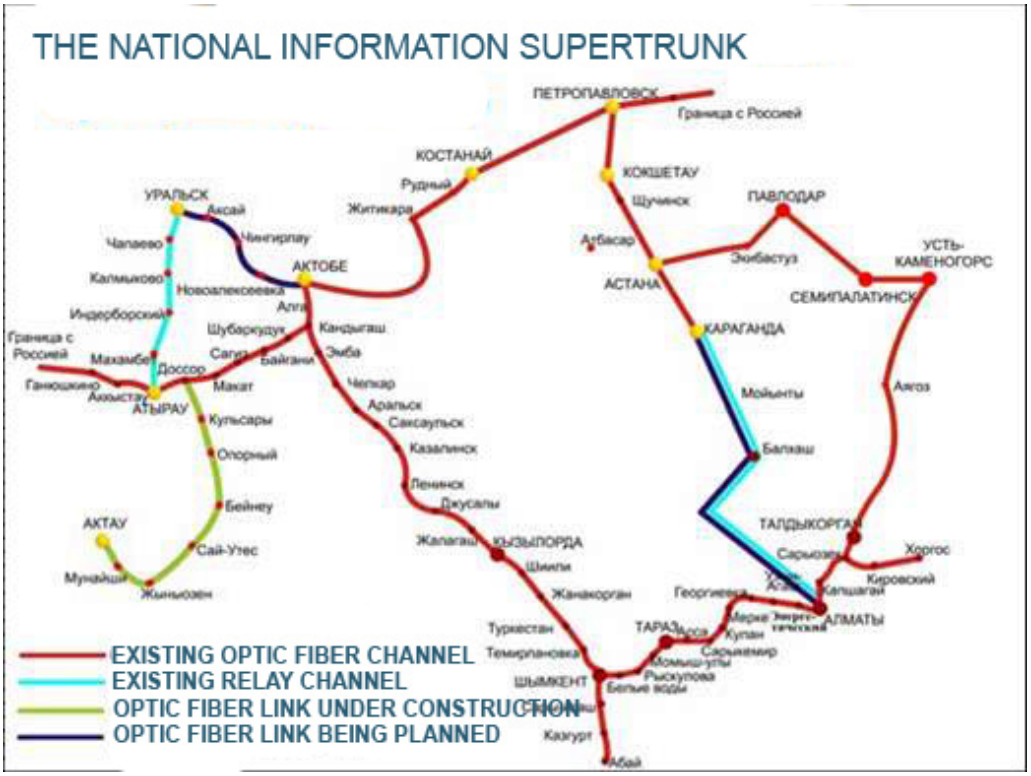
- 1932 – Kazakhstan base of the Academy of Sciences of USSR. Zoology and Botany sectors Almaty Botanic garden starts functioning.
- 1933 – Institute of Livestock
- 1935 — Institute of Land cultivation, Zoo-veterinary Institute and Agricultural Economy Institute, specific institutes – of mechanization and electrification of agriculture, water and forest industries, and protection.
- 1940 - Kazakhstan branch of All-Union Academy of Agricultural Sciences (VASHNIL)
- 1991 - a new period of development of Kazakh science.
- 1992 – the law "On science and technology related policy of Kazakhstan", establishment of the Ministry of Science and New technologies.

- 1993 – Establishment of governmental expertise of science and technical programs funded from the budget. A unified procedure of registration of reports on the open experimental design and technology design activities is developed, legal basis for funding of science and technology and experimental design activities based on targeted program method is established.
- 2001 – The law “On science” is ratified, providing the basis for further improvement of management and organization of innovation and research processes, capacity building and integration of the national science into the global community.

Current state of the national telecommunications

Telecommunication system of Kazakhstan is represented by the national company, “Kazakhtelecom". Traditional telephone and telegraph services, data transfer networking and Internet, intellectual and satellite networking, and many others are provided. Kazakhtelecom is responsible for solving social issues such as providing telephone coverage to rural communities and connecting schools to the Internet. Telephone connections with over 230 countries of the world are provided. The company is undertaking actions on upgrading of the national information infrastructure and is responsible for introduction of new technologies and establishment of the regional market of telecom services, creation of a unified information space and strengthening of the positions of Kazakhstan in the international market of telecom services.

Construction of the optic fiber network commenced, which would allow high speed of data transfer.



Services of «Kazakhtelecom»

- National information supertrunk
- "IP/MPLS“ data transfer network
- High-speed city networks "Metro Ethernet"
- Digitizing community telecom networks
- Satellite telecom services
- Satellite network Kazakhstan Online
- Data transfer networks Kazakhstan Online
- Telephone network Kazakhstan Online
- ISP
- Internet zone
- IN - Intelligent Network
- ISDN

AIS: Potential of agrarian science

Ministry of Education of and Science:

Scientific Research Institute of Agriculture of Kazakhstan, Institute of Plant Physiology, Genetics and Bio-engineering, Institute of Botany and Phytointroduction, Phytochemistry Institute, Agrarian University of Kazakhstan, n.a. S. Seifullin, National Agrarian University of Kazakhstan;

Ministry of Agriculture of Kazakhstan:

Scientific Production Centre for Livestock and Veterinary: НИТИО, НИТИЖ, НИВИ;

Scientific Production Centre for Agriculture and Crop Husbandry (www.kiz.kz): Main Facility (Institute of Crop Husbandry of Kazakhstan), Taldukurgan Branch, East-Kazakhstan SRI of Agriculture, SRI of Potato and Vegetable growing, SRI of Plant Protection.

Scientific Production Centre for Cereal Growing n.a. A.I. Barayev: Centre of Cereal Growing n.a. A.I. Barayev, Kokshetau Branch, Pavlodar SRI of Agriculture, Karaganda SRI of Plant Industry and Breeding,

Scientific Production Centre for Processing and Food Industry: SRI of Fruit Growing and Viticulture, Pomology Garden.

North – Western Scientific Production Centre for Agriculture: Aktobe Agricultural Experimental Station, Karabalyk Agricultural Experimental Station, Urals Agricultural Experimental Station.

South – Western Scientific Production Centre for Agriculture : Chimkent SRI of Agriculture, Krasny Vodopad Experimental Station, Sub-Aral SRI of Agroecology and Agriculture, Shalkar Experimental Station.

Scientific Production Centre for Forestry: Almaty Forest Experimental Station, Altay Forest Experimental Station, Western Kazakhstan Forest Experimental Station

Agricultural Market Information: www.kam.kz

One of the priority areas of operation of «Kazagromarketing» is performing weekly monitoring of prices for the main food products and agricultural produce in all Provincial Centers of the Republic

Agricultural Education

National Agrarian University of Kazakhstan Agrotechnology University of Kazakhstan n.a. S. Seifullin.

Rural telecommunication development strategy

Governmental program for informatization of secondary education resulted in 100% computerization of secondary schools. Central communication unit was established, to which were connected telecommunication units of the Central office of the Ministry of Education and Science, as well as telecommunication units of regional departments of education. Electronic textbooks for secondary education institutions cover 25% of subjects studied in the school.

At the same time, development and utilization of information and communication technologies (ICT) in education is way behind the required:

- In Kazakhstan, there is 1 PC per 54 secondary school students
- Currently, only 44 % of Kazakh schools have access to Internet.
- In vocational schools (lyceums) and colleges, there is 1 PC per 31 and 25 students, respectively. Only 39 % of vocational schools (lyceums) and 51 % of colleges have access to Internet.
- In higher education there are separate local learning process management systems that do not have common interface with the information system.

IS in Agriculture

- The Ministry of Education and Science of Kazakhstan has three websites: www. edu. gov.kz; www.edu-cip.kz; www.edu-control.kz; www.nti.kz
- The Ministry of Agriculture has two websites: www.minagri.kz, www.kam.kz; www.rshb.kz;

Popularization of scientists' achievements

Popularization of scientists' achievements is done through major printed media, such as national scientific magazines: «Agricultural Newsletter of Kazakhstan», «Zharshy», «Newsletter of Akmola KSATU n.a. Seifullin», «Researches and outcomes» (KNAU), «Plant protection and Quarantine in Kazakhstan», «Agroinform», «Newsletter of Semipalatinsk State University n.a. Shakarim», «Newsletter of SPC», «Food and Processing Industry», «Hydrometeorology and ecology» (Kazakh SRI of HMA), «Newsletter of Pavlodar State University n.a. Toraygyrov», «Biotechnology. Theory and Practic» (Stepnogorsk), «Newsletter of Kaz National University n.a. Al-Farabi», «Scientific News of Kazakhstan», International magazine «Agromeridian» (CIMMYT, ICARDA), and scientific magazines of the countries inside and outside of the region.

Scientific extension help is provided to rural producers of all forms of ownership (farming enterprises, households, LLCs, Stock companies). Scientists actively participate in province level (Almaty, Zhambyl) field days and practical research field seminars. Extension is also performed through radio, TV, and media publications, highlighting relevant issues of agro industry and suggesting the ways to solve them.

National Status Report - Kyrgyzstan

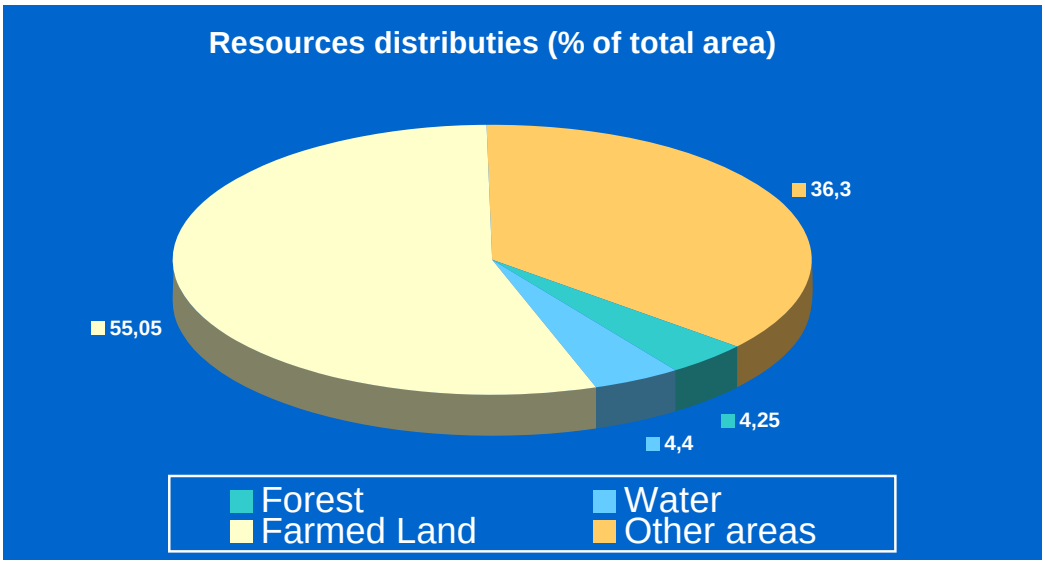
1. Brief description of Country

Kyrgyzstan

Kyrgyz Republic

- Located in the North-East of Central Asia
- Borders upon Kazakhstan in the North
- Borders upon China from South-East and East
- Tadjikistan in the South-West and
- Uzbekistan in the West

Total area of Kyrgyzstan
199.9 thousand sq. km.



About 94% of the territory of Kyrgyzstan is located at altitudes over 1000 m.
Average altitude is 2750 m above sea level.
Highest point – 7439 (Pik Pobedi)
Lowest point – 349 m (Batken region)

Population of the Republic: over 5 mln people, including over 65% living in rural areas.
There are people of over 90 nationalities living in the Republic
Over 80% of population are Muslims.

There are 7 regions in Kyrgyzstan:

- Batken,
- Djalal-Abad,
- Issyk-Kul,
- Naryn,
- Osh,
- Talas,
- Chuy.

Each region is further divided into districts.

Total number of districts over the country: 40, towns: 22.

Districts are divided into 429 village-based Ayil Keneshes

Capital – Bishkek city

2. Brief description of Agriculture

Agriculture is main sector of the economy and provides 46% of Gross Domestic Product.

This sector employs 45% of active population of the country.

Kyrgyzstan covers just 0.13% of the total mainland on the Earth, but is a home for about 2% of world's flora.

- Scientific research in agriculture is conducted by the institutes of the Ministry of agriculture, water resources and processing industry of the Kyrgyz Republic, including institutes of farming, livestock breeding, veterinary and pastures, irrigation.
- Scientific research in classification and soil studies in the country, creation of new agricultural varieties are conducted by the Scientific Research Institute of Farming and National Soil-Agrochemistry Station
- The Kyrgyz scientific-research institute of irrigation conducts scientific research in application of information technologies in agriculture management, automation of irrigation systems, hydromeliorative research, sets technical policies in irrigation and drainage. Conducts training and consultations locally, using training bases of the Department of water resources, and those of the extensive network of water users' Associations.
- The Institute of livestock breeding, veterinary and pastures develops policies for cattle breeding, fodder production, rational use of pastures and prevention of livestock diseases

Main agricultural crops

- grains
- fodder crops
- fruits and berries
- sugar beet
- cotton
- potato

3. The short description:

A. A current condition of telecommunications in the country

ICT Sector is one of priority directions of development in Kyrgyzstan. In March, 2002 the President of the country has signed the National strategy on «information-

communication technologies for development of the Kyrgyz Republic». Three priority spheres are – the electronic government, electronic formation and electronic economy.

National strategy ICT is considered as one of the important directions for development of the country within the framework of realization of national strategy «the Complex basis of development (BARKS) of the Kyrgyz Republic till 2010». ICT gives the big possibilities for achievement of the purposes of BARKS, accelerations of economic development and poverty reduction. ICT possess huge potential to become the catalyst and the engine for development of Kyrgyzstan.

Internet technologies have been used for the first time during parliamentary and presidential elections of the Kyrgyz Republic. The state Automated System "Шайлоо" constructed on the basis of Internet technologies has provided interactive calculation of voices of voters on all regions of Republic.

For the first time in Kyrgyzstan Internet broadcasting is realized. Also the system of the interactive voting concerns achievements of last years, allowing direct participation of televiewers in spent social interrogations in the air realized together with national channels of TV.

According to experts of Association of Communication statements and company "Areopagus", a share of all the market of telecommunications in country gross national product – 2,7 % or about 40 million US dollars. Geographically 90 % of the market with concentration in Bishkek and Chuysky area (the population of the given area – 20 %). As a whole the market is highly monopolized: 90 % of receipts of telecommunication sector ICT are supervised by 3 companies.

In total now in sector ICT is about hundred companies. They are, basically, the small enterprises. Up to 80 % from them has number of employees from 3 to 15. There are some large companies with number of workers in some hundreds, and even thousand persons. The least quantity of the personnel is with the companies which are engaged in education in the field of ICT, and also Internet providers. Half of Internet providers have up to 4 employees.

The Internet and Kyrgyzstan

Being a powerful tool of information, the precondition of their economic integration, the Internet can simultaneously appear as the tool of information, political and cultural expansion. Kyrgyzstan among the CIS countries by quantity of users and visitors of the Internet takes leading positions.

The history of computer networks in Kyrgyzstan originates in 1991 when in Bishkek the knot of a telecommunication network has been created, serving about 20 subscribers. In May, 1992 the official status of knot of network RELCOM was received by the subscriber of a network – "Имфико" which by the end of 1992 served already about 50 subscribers, sending the information through the Russian networks. In 1994 two

companies which are today the largest providers in territory of the Kyrgyz Republic have been created.

Joint state-private enterprise "ЭлКат" has been created in 1994 on the basis of knot ИМФИКО of a network "Relcom" for project realization on creation of a national network of Kyrgyzstan. "ЭлКат" provided e-mail transfer on territories of Kyrgyzstan, communication with the CIS countries, and since 1995 delivers a full set of Internet services.

Telecommunication enterprise "АзияИнфо" was created in 1994 as the Kyrgyz branch of network ИНФОТЕЛ for granting of services in transfer under report X.25. In 1995 on the market of network services there was one more company – «a Ltd. Transfer». Same year, namely on July, 25th, the domain «.kg» has been officially registered. The provider «АзияИнфо» carries out the right of delegation of the domain of first level KG in Kyrgyzstan.

V. Telecommunications and the agricultural policy

In the Kyrgyz Republic, progress in development of an information infrastructure, information of the state organizations and the private companies, the corresponding legislation is being developed. The First telecommunication project, Projects TAE is finished, the State computer network is created.

The reached level and problems of development ICT in the Kyrgyz Republic define necessity of transition from the policy directed approach towards development of separate branches of information – communication and information technologies and to start formation of the general strategy of integration into the world information society. Owing to already available technological possibilities, the basic direction of a policy can be transferred on formation of a uniform information field of the republic, development of information resources, databases and knowledge and an information infrastructure which in an equal measure can use both the state structures, and a civil society as a whole.

S. Strategy of development of telecommunications in a countryside

National strategy on communication technologies for development of the Kyrgyz Republic defines the basic priorities, the purposes and problems, main principles, positions and state policy directions in sphere of ICT. National Strategy is considered as one of the important directions for development of the country within the limits of program realization. ICT give the big possibilities for achievement of the purposes of BARKS, accelerations of economic development and poverty reduction. ICT possess huge potential to become the catalyst and the engine for development of Kyrgyzstan. Potential benefits from development ICT include achievement of a management

efficiency and increase of productivity of manufacture, occurrence of new export possibilities, possibilities of export of software product and granting ICT of service, maintenance with the information of farmers about commodity markets of agricultural products and weather conditions, creation of primary advisory medical aid, expansion of possibilities of Remote formation, cooperation improvement between the state, local communities and a private sector in regions, improvement of quality of the service given by the state to citizens. It is necessary to achieve increase in share ICT sector in gross national product to 5 % by 2010

4. Problems and the difficulties connected with use of information systems with application ICT

The share of agriculture in gross national product of Kyrgyzstan has considerably increased in comparison with the Soviet period basically at the expense of reduction of a share of the industry. In the advanced countries with the developed industrial agriculture, such as the USA, Japan, France the agriculture share in gross national product does not exceed 3 %.

In the conditions of limitation of accessible natural resources, resources for agriculture development, absence of petrodollars, deep crisis of the industry the encouraging way of development of Kyrgyzstan is still available. It is the economy based on knowledge. It is export ICT - products, scientifically-educational, consulting, etc. services.

5. Requirements for information-communication management

The systemic approach to development of ICT leads to understanding of necessity of carrying out of electronic transformation of the organizations, innovations based on IT systems of management of knowledge, allows to consider the basic problems of formation of economy of knowledge on the basis of ICT in Kyrgyzstan, and also methodical aspects of construction of systems of electronic management of knowledge in computer networks. The economy of knowledge is considered as a strategic priority of the country. The attention to the decision of the problems following from priorities of National strategy «Information and communication technologies for development of the Kyrgyz Republic» is paid.