Eurasian Development Bank

Integration Processes in CIS Telecommunications Sector

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Abbreviations

2G, 2.5G — second generation mobile networks

3G, 3.5G — third generation mobile networks

4G — fourth generation mobile networks

ARPU — Average Revenue per User

C-ring — Caspian ring

CDMA — Code Division Multiple Access

CIS — Commonwealth of Independent States

DPC — data processing centre

DSL — digital subscriber line

EBITDA — Earnings before Interest, Taxes, Depreciation and Amortisation

FOCL — Fibre Optic Communications Line

CAGR — Compound Annual Growth Rate

GLONASS — Global Navigation Satellite System

ICT — information and communication technologies

ITU — International Telecommunications Union

HD, HDTV — high definition TV

HSDPA — High-Speed Downlink Packet Access

NGN — next generation networks

MTS — Mobile TeleSystems

OWA — open wireless architecture

RCC — Regional Commonwealth in the field of communications

TAE — Trans-Asia-Europe FOCL

TASIM — Transnational Eurasian Information Super Trunk Line

TNC — transnational corporation

TTC — TransTeleCom

UMTS — Universal Mobile Telecommunications System

VSAT — Very Small Aperture Terminal

Wi-Fi — Wireless Fidelity

Wi-MAX — Worldwide Interoperability for Microwave Access

Main conclusions

- **The main trend in the telecommunications sector in recent years is the rapid development of mobile communications and Internet services**. In the CIS, telecommunications developed in an explosive, albeit uneven manner. The levels of penetration of fixed-line and mobile communications services in Russia, Kazakhstan, Ukraine, are much higher than in poorer countries such as Tajikistan or Uzbekistan. Investors sought to increase cost-effectiveness by building highly integrated next generation networks (NGN), and many fixed-line and mobile operators, notably, VimpelCom, MTS and MegaFon, entered the triple play market the provisioning of Internet access, television and telephone services over a single connection).

- **The major players in the CIS telecommunications market are Russian operators**. To date, they are active all over the CIS and in some overseas markets (VimpelCom provides telecommunications services in Vietnam and Cambodia, and MTS in India). Fixed-line operators from Russia and Kazakhstan have also sought to expand their geography (Rostelecom, TransTeleCom (TTC) and Kazakhtelecom have all shown interest in buying telecom companies in neighbouring states). Liberalisation of telecommunications markets triggered a capital inflow in the sector, which in turn led to an improvement in the quality of telecom services. **Corporate integration** which began in the 2000s is working to improve the ultimate competitiveness of the economies. An example of corporate integration in the CIS is the expansion of Russian mobile operators into neighbouring markets, the laying of trunk cables through the member states' territories (e.g. the Trans-Asia-Europe FOCL (TAE), and joint ventures with world IT leaders. MTS and VimpelCom are evolving into transnational corporations (TNC). The private nature of these major players is an advantage when it comes to international competition and expansion. Liberalisation of telecommunications is a key precondition to progress, as it ensures an influx of capital and new technology into this sector.

- **CIS countries have significant transit potential as regards data transfer.** This region lies on the shortest data transfer route from Asia to Europe. However, at present this competitive advantage is not used to its full potential (most traffic circumvents the CIS across two oceans and the US). According to ComNews Research, as little as 6% of all Europe-Asia traffic goes through Russian territory. In addition to this distance, another advantage of the overland route is that repairs after an accident can be made much faster than in the case of a submarine cable. Typically, it takes Russian operators four hours to repair a cable – an impossible time span for underwater work.

- **The main engines of development are dynamic private companies**. Russian mobile operators having mastered the domestic market entered the new market firstly the CIS countries. **The state acts as a system-forming element of the telecommunications sector**: it formulates the overall development policy, legal framework, and the principles of international cooperation. CIS governments should support the efficient functioning of telecommunications by reducing or eliminating cross-border restrictions. These measures could include, for example, removal tariff or non-tariff barriers for manufacturers and harmonisation of laws and economic policies.

Introduction

Globalisation of world economy and the increasing transparency of national borders elevated the role of information to a new level; information can provide critical advantages to an individual company, country or the entire region. The possession of a competitive telecommunications sector is a precondition to a nation's entry into the global economic and information community.

The telecommunications market is currently divided into a number of distinct service segments based on the following telecommunications types:

- fixed–line telephony;
- mobile communications;
- data transfer (Internet access);
- satellite communications.

According to the world's leading manufacturer of network equipment, Cisco Systems, by the end of 2010 video streaming will become the main generator of Internet traffic. By 2014 the global online video community will surpass 1 billion users. It would take over two years to watch the amount of video that will cross global IP networks every second in 2014. It would take 72 million years to watch the amount of video that will cross global IP networks during calendar year 2014 (Cisco, 2010). These figures illustrates the prospective role of telecommunications.

The purpose of this paper is to provide an insight into integration processes in the CIS telecommunications sector, the prospects for telecom companies as potential targets for investment, the region's transit potential, and integration of CIS countries into the regional and global information community. The authors focus on the current status of telecommunications in the CIS, existing investment opportunities, cross–border investments, and major players in the mobile and fixed–line communications. Particular attention is paid to the transit potential of the region.

1. Telecommunications market review

1.1. Comparative analysis of CIS markets by communications type

According to the International Telecommunications Union (ITU), by the end of 2009 over 4.6 billion people (about 67% of the world population) used mobile communications, and Internet users accounted for 26% of the world population (1.7 billion people). Astoundingly, fixed-line telephony already lags behind mobile communications (23% of the world population or 640 million people) (ITU, 2009).

This trend is also observed in the post-Soviet states. The last decade saw a telecommunications boom, and the level of penetration of fixed-line, mobile and Internet services was especially high in Russia, Kazakhstan and Ukraine: according to the ITU, by the end of 2008 there were 314 million users of mobile communications, 72 million users of fixed-line telephony, 69 million Internet users, 12 million users of fixed-line broadband communications and 2.4 million users of mobile broadband communications in CIS countries (see Figure 1.1).
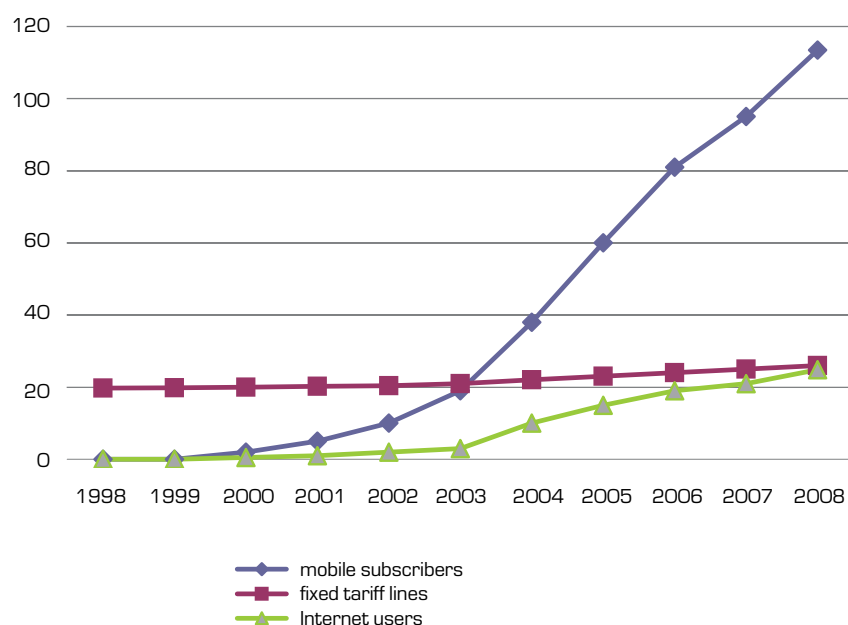
Figure 1.1.
Development of information and telecommunications technology in CIS in 1998–2008

Source: ITU (2009)

The annual pace of penetration of **fixed-line telephony** appears to be a sufficient index to use in assessing its dynamics. CIS countries except Russia and Ukraine still lag behind Europe. In marked contrast to other world regions, the penetration of fixed-line communications in the CIS in 2008 increased by 26%, which is entirely attributable to the low base levels (see Figures 1.2 and 1.3).

Figure 1.2.
Number of main fixed
telephone lines
in the world (mln)

Source: Telecommunications
Without Borders
Research Centre

Note: based on World Bank data (2010)
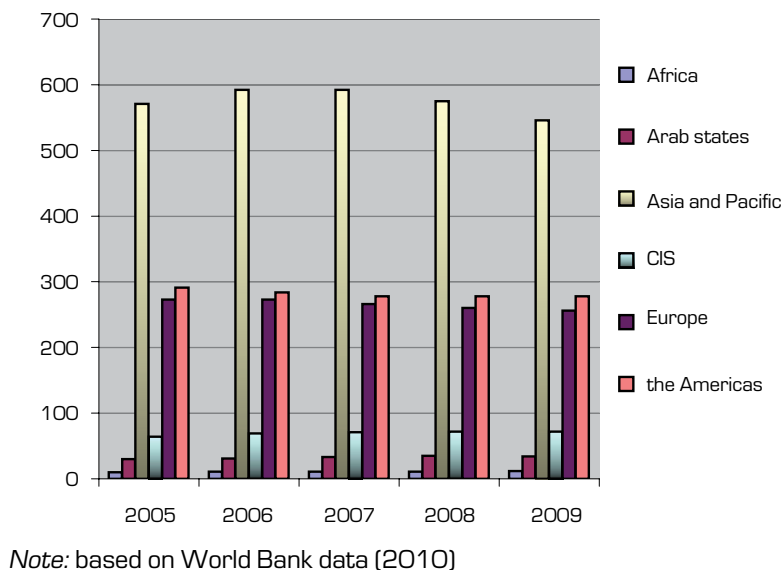
Figure 1.3.
Number of main
fixed telephone lines
in CIS (mln)

Source: Telecommunications
Without Borders
Research Centre

Note: based on World Bank data (2010)
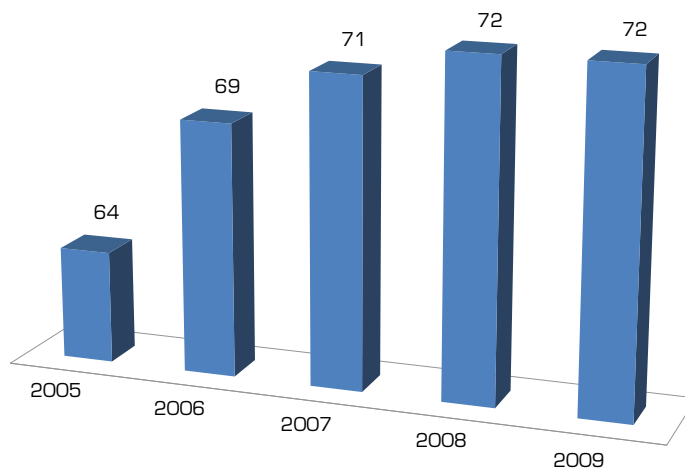
Only 17% of all fixed telephone lines are located in rural areas; the remaining 83% are urban-based. Fixed-line subscribers account for 12% of the population. Investments made during 2007–2009 were directed to partially digitalise the network, lay fibre optic lines, build broadband networks based on xDSL (digital subscriber line) and Ethernet technology, and build parts of the next generation networks (NGN) (ITU, 2009).

It can be safely said that the fixed-line market is oversaturated, and demand is likely to decrease over the next 2–3 years.

The CIS is one of the most dynamic mobile communications markets with an average annual growth of 44% (in 2003–2008). Penetration of mobile communications services increased from 17.9% in 2003 to 113% in 2008. This rapid development can be partially explained by increasing competition between market players (ITU, 2009).
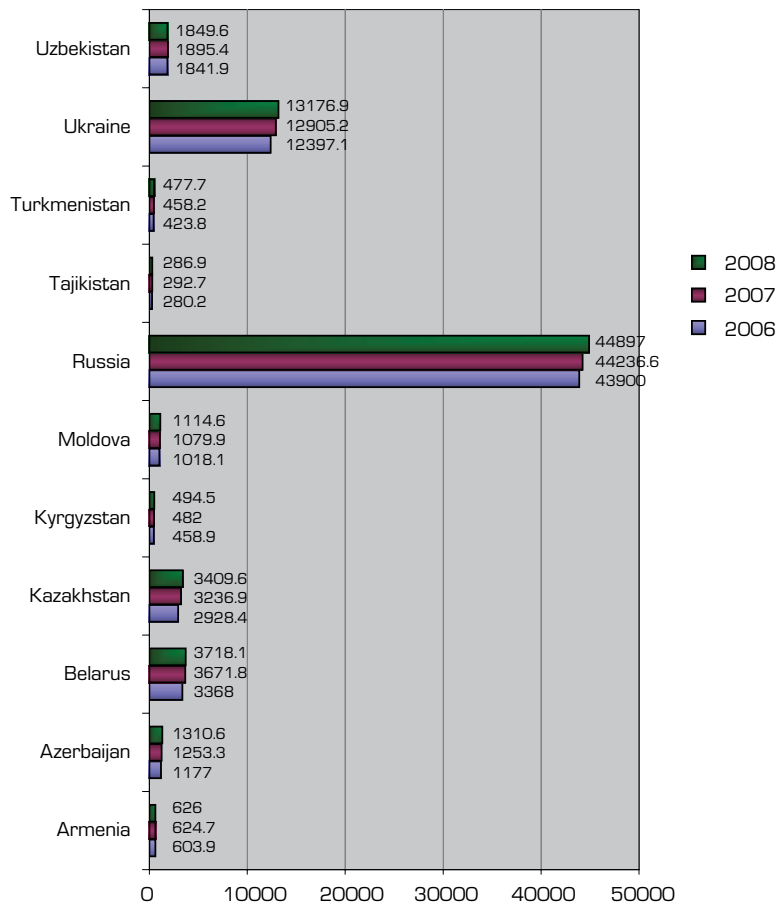
Figure 1.4.
Number of
fixed telephone lines
(in thousands)

Source: Telecommunications
Without Borders
Research Centre

Note: based on ITU reports

ICT development levels vary greatly across the CIS. In Russia and Ukraine the penetration of mobile communications services is approaching 120%, whilst in Turkmenistan this index does not exceed 10%. Growth rates in the CIS during 2002–2007 averaged at 60%, which is a fairly high figure compared with other world regions. The main reasons for this rapid growth are the underdeveloped fixed line networks and increasing competition on the telecommunications market (ITU, 2009).

On the whole, annual growth of mobile communications services in the CIS is faster than elsewhere in the world, but most CIS countries except Russia, Ukraine, Kazakhstan and Belarus still lag far behind in this segment.
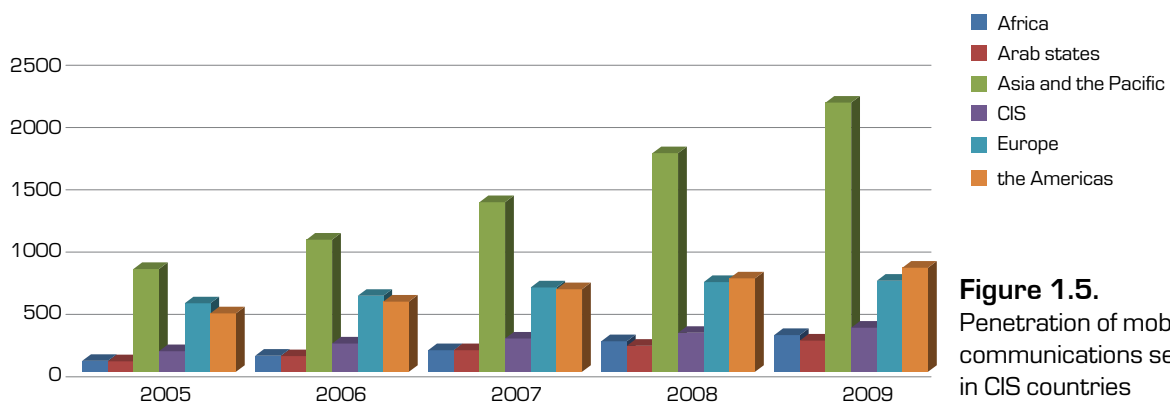
Figure 1.5.
Penetration of mobile
communications services
in CIS countries
(in millions of lines)

Source: Telecommunications
Without Borders
Research Centre

Note: based on World Bank data (2010)

Country	2005	2006	2007	2008	2009
Armenia	10.377	41.055	61.072	75.916	84.984
Azerbaijan	26.523	38.925	52.355	75.001	87.828
Belarus	41.762	61.004	71.574	83.977	100.547
Kazakhstan	35.527	50.828	79.975	96.064	95.897
Kyrgyzstan	10.374	23.89	40.559	62.694	81.849
Moldova	28.989	36.619	51.339	66.699	77.281
Russia	83.17	105.714	120.613	141.111	163.622
Tajikistan	4.055	32.443	31.703	53.737	70.481
Turkmenistan	2.168	4.416	7.668	22.507	29.355
Ukraine	63.945	105.306	119.337	121.095	121.058
Uzbekistan	2.736	9.509	21.158	45.512	59.727

Table 1.1.
Number of mobile communications subscribers (per 100 residents)

Source: Telecommunications Without Borders Research Centre

Note: based on World Bank data (2010)

The attractive targets for investment may be Turkmenistan and Uzbekistan, which have the lowest penetration levels in the region. A notable increase in the number of mobile communications subscribers during 2000–2005 was achieved principally by the introduction of the second generation 2G and 2.5G networks based on GSM technology.

The number of **Internet** users was on the rise in recent years. However, in this segment the CIS lags behind most world countries, as the penetration levels in Armenia, Turkmenistan, Tajikistan and Uzbekistan are lower than 15%.

Figure 1.6.
Number of Internet users in CIS countries (in thousands of people)

Source: Telecommunications Without Borders Research Centre
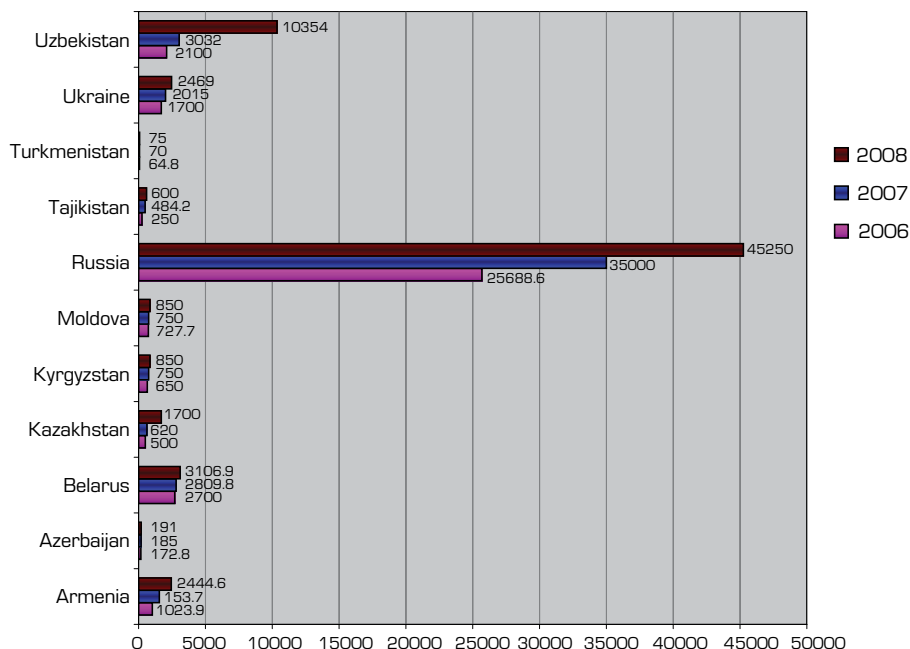
Note: based on ITU reports

In recent years there has been a sharp increase in the number of Internet users in the CIS. This process was fuelled by tough competition between operators and the introduction of mobile broadband communications technology.

The percentage of broadband Internet lines in most post–Soviet counties is low. This means that most users only have an access to low–speed connections. The low levels of penetration of broadband allow us to assume that the CIS market has considerable potential in this respect. The throughput capacity of international channels can be improved by:

- modernising or building international crossover points by Internet providers;

- establishing Internet service providers (ISP) companies whose functions will include maintaining the required throughput capacity of international channels, e.g., at Tier–1[1] level.

Fixed–line broadband Internet access[2] can be based on xDSL technology (digital subscriber lines), Ethernet (local networks), cable TV networks, fibre optic lines, or Wi–Fi and Wi–MAX technology. By the end of 2008 fixed–line broadband Internet access in the CIS was available to 12.5 million people.

Country	2005	2006	2007	2008	2009
Armenia	0.065	0.065	0.127	0.161	0.195
Azerbaijan	0.026	0.046	0.169	0.687	1.132
Belarus	0.016	0.117	1.746	4.937	11.338
Kazakhstan	0.02	0.199	1.755	4.257	8.747
Kyrgyzstan	0.044	0.052	0.054	0.056	0.096
Moldova	0.277	0.588	1.286	3.169	5.189
Russia	1.11	2.035	3.452	6.563	9.157
Tajikistan	0	0	0.054	0.054	0.054
Turkmenistan	0	0	0.054	0.054	0.054
Ukraine	0.277	1.116	1.728	3.479	4.174
Uzbekistan	0.031	0.032	0.071	0.243	0.323

Table 1.2.
Number of fixed–line broadband communications users (per 100 people in CIS countries)

Source: Telecommunications Without Borders Research Centre

Note: based on World Bank data (2010)

As can be seen from the table above, the highest levels of penetration of fixed–line broadband communications are observed in Belarus, Kazakhstan, Moldova and Russia. It should be noted that the main network infrastructure is typically concentrated in capitals, regional centres or large cities and is not accessible to the rural population.

Mobile broadband access. According to the ITU, the level of development of mobile broadband communications in the CIS is growing steadily. Since 2006 this growth averaged to 50% per annum or higher. By the end of 2008 the number of subscribers reached 2.5 million and the level of penetration was 0.9% (ITU, 2009). This can be explained by the fact that the service is based on the third generation networks (3G and 3.5G) that developed rapidly during 2005–2007 (see Table 1.3).

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[1] Tier–1 companies are transnational companies which have created the US Internet market.

[2] Broadband or high–speed Internet access is based on technologies which enable the user to send or receive data in a much larger quantities and at a much higher speed than the normally used Internet connections via fixed telephone lines.

Country	Inception	Technology	Application
Armenia	2009	UMTS/HSDPA	Commercial
Azerbaijan	2005	CDMA	Trial, licensed in 2009
Belarus	2006	UMTS, EV-DO (Rev.1x,Rev.A)	Commercial since 2009
Kazakhstan	2009	CDMA2000	Trial, licensed in 2009
Kyrgyzstan	2007	CDMA2000	Licensed in 2007
Moldova	2007	CDMA2000	Commercial since 2008
Russia	2008	Licensed in 2007	Licensed in 2007
Tajikistan	2005	CDMA, UMTS, UMTS/HSDPA (3.5G)	Commercial since 2006
Turkmenistan	2010	n/a	3G network in the pipeline
Ukraine	2004	CDMA, CDMA2000, UMTS/HSDPA (3.5G)	Licensed in 2005
Uzbekistan	2008	UMTS/HSDPA	Licensed in 2007

Table 1.3.
Development of 3G and 3.5G networks in CIS countries

Source: Telecommunications Without Borders Research Centre

Note: based on ITU reports

Country	2005	2006	2007	2008	2009
Armenia	0	0	0	0	1.213
Azerbaijan	0	0	2.433	11.729	13.735
Belarus	0	0	10.952	15.524	27.286
Kazakhstan	0	0	0	0	0
Kyrgyzstan	0	0	0	0	0.756
Moldova	0	0	0	0.096	2.214
Russia	0	0.012	0.032	0.6	32.866
Tajikistan	0.005	0.029	0.273	0.739	1.813
Turkmenistan	0	0	0	0	0
Ukraine	0	0	0.914	1.837	3.792
Uzbekistan	0	0.006	0.731	1.011	1.166

Table 1.4.
Number of mobile broadband communications (3G) subscribers (per 100 people in CIS countries)

Source: Telecommunications Without Borders Research Centre

Note: based on World Bank data (2010)

The table above indicates that mobile broadband access is still new to CIS countries. It is expected to develop rapidly in 2010–2014 when CIS operators complete the introduction of 3G and 3.5G technology. On the whole, the growth in broadband communications is driven by competition and price reduction, but also depends on the availability of telecom infrastructure. In many developing countries there is little incentive to introduce broadband communications services outside urban areas due to a lack of mass production and infrastructure.

1.2. Prospects for network development in the CIS

Basic 2G and 2.5G generation services include voice communications and low–speed data transfer. The convergence of networks and services and development of next generation networks using the IP protocol led to the emergence of numerous broadband applications and services. This necessitated the improvement of mobile communications technology in order to offer new services to subscribers, and eventually the third generation 3G and 3.5G networks appeared. The quality of service and throughput capacity of these networks is comparable with those of modern fixed–line networks. Third generation networks support high–speed data transfer (broadband Internet access), audio and video streaming, and multimedia messaging services (MMS).

The introduction of new ICT is impeded by:

- the need for conversion of the radio frequencies required by technology. This involves financial and technical issues which protract the bidding process. This situation can be observed in Belarus, Kazakhstan, Russia, Ukraine and other CIS countries;

- the high cost of a licence for the provision of 3G services and high monthly (annual) radio frequency fees;

- a lack of an extensive broadband infrastructure.

The development of the mobile communications market and NGN require heavy investments. To assist this process, governments should eliminate barriers to capital inflow into this sector. These investments will eventually lead to overall improvements in the national telecommunications infrastructure (PMR Publications, 2009).

3G technology is already introduced in many CIS countries. Tajikistan pioneered 3G telephony: in 2005 MegaFon obtained a licence for operating in the UMTS standard in this country. These services are also being provided in Ukraine, Russia, Armenia, Uzbekistan and Moldova.

In Kazakhstan, the introduction of 3G technology slowed down at an early stage: the required radio frequency was reserved by the Ministry of Defence and became available only in late 2009. The process is now being impeded by the expensive licence and high radio frequency fees. The Kazakh Agency on Information Technology and Communications is ready to license the radio frequency for 3G networks for a lump sum of 5 billion tenge and consequent annual fees of 2 billion tenge (Britskaya, 2010).

The disadvantage of 3G technology is the necessity to lease fixed-line networks from the owners. This may detain the expansion of 3G services in CIS countries even further. A possible solution to this problem is the construction of new broadband networks by Internet providers or mobile operators.

The next step in ICT development is transition to fourth generation technology which is far more superior to 3G in technical terms. The main advantage of a 4G network is that it builds upon open wireless architecture (OWA) which enables the integration of existing and forthcoming wireless access and mobile and fixed-line communications systems on a single platform. A converged broadband OWA platform also allows the provision of services to different categories of users on optimised and simplified basis.

Due to the integrating nature of 4G technology an operator can freely interact with other operators who use other technology; this is an important consideration in the context of technological integration in the CIS telecommunications market.

Forecast of world traffic

The telecommunications market feels major changes as a result of transition to new networks and increasing competition. Developed countries already have sophisticated telecommunications infrastructure, whereas developing countries are only beginning to build them. Transition to NGN requires heavy investments. In addition, NGN will bring about new types of services which could potentially expel traditional voice communications from the market.

The growing competition has reshaped the market: high-speed Internet access packages often include voice and image transmission, as additional services. In other words, voice communications is being gradually reduced to a secondary function.

NGN will undoubtedly influence the ICT available to end users; this first of all concerns the price of service and the ability to select a provider. New networks are likely to give rise

to absolutely new business models. However, NGN will also bring about new problems: higher investment requirements at the inception stage and regulatory gaps[3]. Most countries do not have a legal framework that would ensure protection of investments in this segment at least at a minimum level.

According to the world's leading manufacturer of network equipment, Cisco Systems, by the end of 2010 video streaming will become the main generator of Internet traffic, stealing leadership from peer-to-peer traffic. By 2014 the global online video community will surpass 1 billion users. It would take over two years to watch the amount of video that will cross global IP networks every second in 2014. It would take 72 million years to watch the amount of video that will cross global IP networks during calendar year 2014 (Cisco, 2010). The Cisco Visual Networking Index: Forecast & Methodology 2009-2014 states that in 2014 global Internet traffic will quadruple to 767 exabytes. This is 10 times the annual traffic in 2008.

According to the same report, in 2014 video streaming will account for 91% of global consumer traffic. The dramatic increase in traffic will be attributable principally to enhanced bandwidth and data transfer speed, and the growing popularity of high definition Internet video (HD and 3D).

Regional trends in IP traffic growth. According to Cisco Systems, by 2014 the main traffic-generating regions will be North America (19.0 exabytes a month), Asia and the Pacific (17.4 exabytes a month), Western Europe (16.2 exabytes a month) and Japan (4.3 exabytes a month). The fastest growth in IP traffic in 2009-2014 will be observed in Latin America (51% Compound Annual Growth Rate (CAGR), by 7.9 times in total), the Middle East and Africa (45% annually, by 6.5 times in total), and Central Europe (38% CAGR, by 5.1 times in total) (Cisco, 2010).

Advanced Internet Video (3D and HD). In 2009-2014 advanced video traffic including 3D and HD will increase by 13 times. By 2014 the level of 3DTV traffic will be 4%. By 2014 3D and HD will comprise 42% of consumer internet video traffic.

Global file exchange. According to Cisco Systems, by 2014 traffic generated by file exchange will average at 11 exabytes a month. Average annual growth in this segment of traffic in 2009-2014 will be 22%. Peer-to-peer file-sharing networks will continue to grow at a moderate pace with a CAGR of 16% from 2009 to 2014. Other means of file sharing, such as one-click file hosting, will grow rapidly at a CAGR of 47%. Despite this growth, peer-to-peer as a percentage of consumer Internet traffic will drop down to 17% of consumer Internet traffic by 2014, from 39% at the end of 2009.

Global Business traffic. According to Cisco Systems, global business IP traffic is expected to grow three-fold in 2009-2014 and reach 7.7 exabytes per month. Business video conferencing will grow ten-fold over the forecast period. Business video conferencing traffic is growing almost three times as fast as overall business IP traffic, at a CAGR of 57% in 2009-2014. Web-based video conferencing is the fastest growing sub-category with a 180-fold increase or 183% CAGR in 2009-2014.

Mobile broadband traffic. According to Cisco Systems, in 2009-2014 global mobile traffic will increase by 39 times to 3.5 exabytes a month and over 42 exabytes a year.

In 2009 peer-to-peer and corporate traffic accounted for 79% and 21% of the total traffic, respectively. By 2014 the level of peer-to-peer traffic (including web surfing, instant messaging, users' video, etc.) will increase to 87%, whilst the level of corporate traffic (including email, voice communications, web conferences and high-resolution video conferences) will decrease to 13% of the total monthly traffic.

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[3] See web-site: http://www.itu.int/ITU-D/treg/publications/index-fr.html.

2. Investments in CIS telecommunications sector

2.1. Investments in ICT

Investments are critical to the development of any market, and telecommunications is no exception. Arriving in a new country can be a mutually beneficial strategic decision for both the company seeking to expand its sales geography and for the receiving country.

At the summit *Connect CIS* under the patronage of the ITU and the Regional Commonwealth in the field of communications (RCC), an opinion was voiced that the CIS had been affected by the financial crisis more than any other region.

Country	2004	2005	2006	2007	2008
Armenia	61.7	132	0	104	110.6
Azerbaijan	109	123	413.6	188	474
Belarus	148	187.6	220.4	660.9	1 130
Kazakhstan	275.7	484.5	635.2	838	1 146.6
Kyrgyzstan	0.6	0.6	35.9	5	75
Moldova	9.6	36.5	34	163.3	81
Russia	5 952.3	5 906.3	6 397	6 586.1	7 692
Tajikistan	n/a	n/a	n/a	11	53
Turkmenistan	383.8	7 328.9	1 991.7	2 215	3 954
Ukraine	738	1 407.3	865.2	1 345.8	1 363.8
Uzbekistan	3	93	90	272.1	318.8
Total	7 681.7	15 699.7	10 683	12 389.2	16 080

Table 2.1.
Investments in CIS telecommunications market ($ million)

Source: Telecommunications Without Borders Research Centre

Note: based on World Bank data (2010)

Telecom companies are currently concerned about maintaining current liquidity, protection against exchange rate fluctuations and debt restructuring rather than geographic expansion or product line development. Operators who have funds available for investing are becoming more careful when selecting potential targets for financing (see Figure 2.1).

17%
25%
58%

■ no influence
■ investment programmes reduced by less than 30%
■ investment programmes reduced by 30%–60%
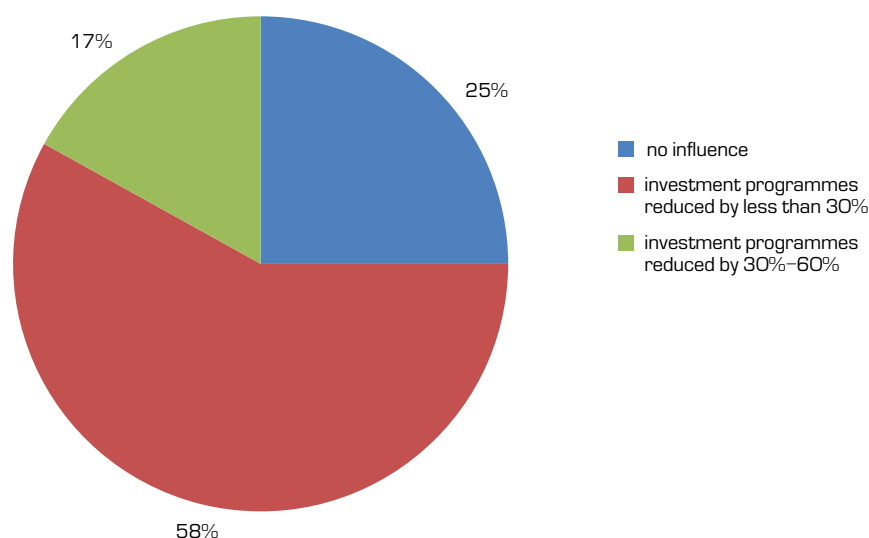
Figure 2.1.
Impact of economic situation on investment projects in 2009

Source: Kotlov, Prikazchikov (2009)

Operators now face the task of searching new sources of income, and one solution could be to expand the range of their services (Kotlov, Prikazchikov, 2009) (see Figure 2.2).
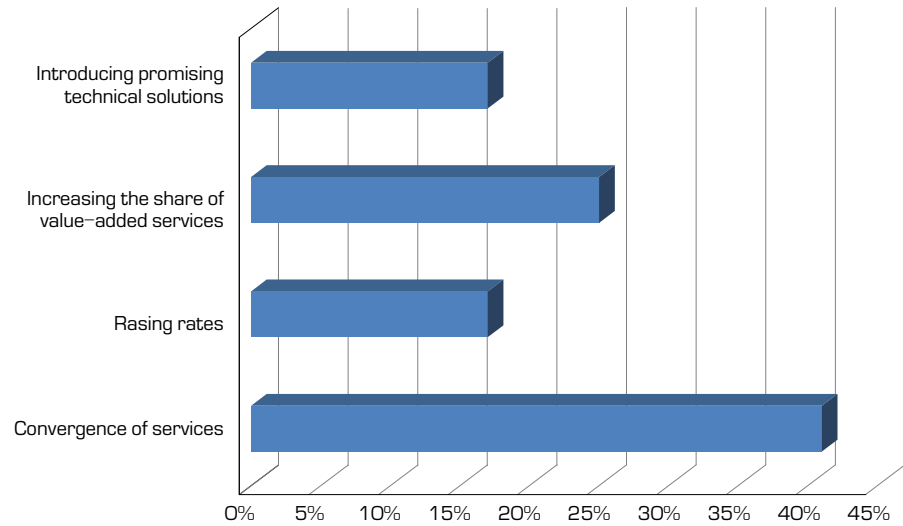
Figure 2.2.
Ways to maintain or raise existing income levels

Source: Kotlov, Prikazchikov (2009)

Conditions for investing in ICT changed dramatically in 2009. According to the World Bank, there was a sharp decrease in bank lending. The collapse of major investment banks such as Lehman Brothers destabilised the financial situation in the ICT sector even further.

In recent years there has been some increase in investments in ICT in CIS (see Table 2.1), notably in mobile infrastructure and broadband Internet access. However, the latter remains quite expensive and largely inaccessible in rural and remote areas.
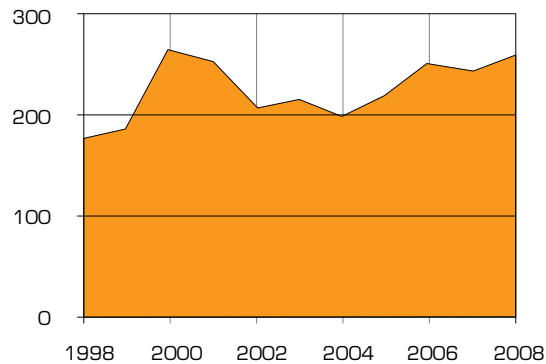
Figure 2.3.
Global investments in telecommunications in 1998–2008 ($ billion)

Source: ITU (2010b)
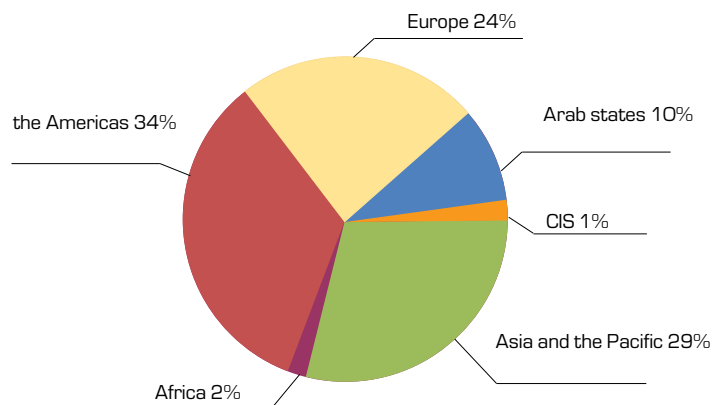
Figure 2.4.
Investments in telecommunications by region in 2008

Source: ITU (2010b)

According to the World Bank, there was a sustained upward trend in investments in the CIS telecommunications market until 2007, including private sector investments.

However, according to the analytical group of the Fitch Rating Agency, the telecommunications industry was in good shape in early 2010, having successfully overcome most of the difficulties of the crisis associated with liquidity, refinancing and exchange rase fluctuations, and that this positive trend is likely to continue[4] (see Figures 2.5 and 2.6).
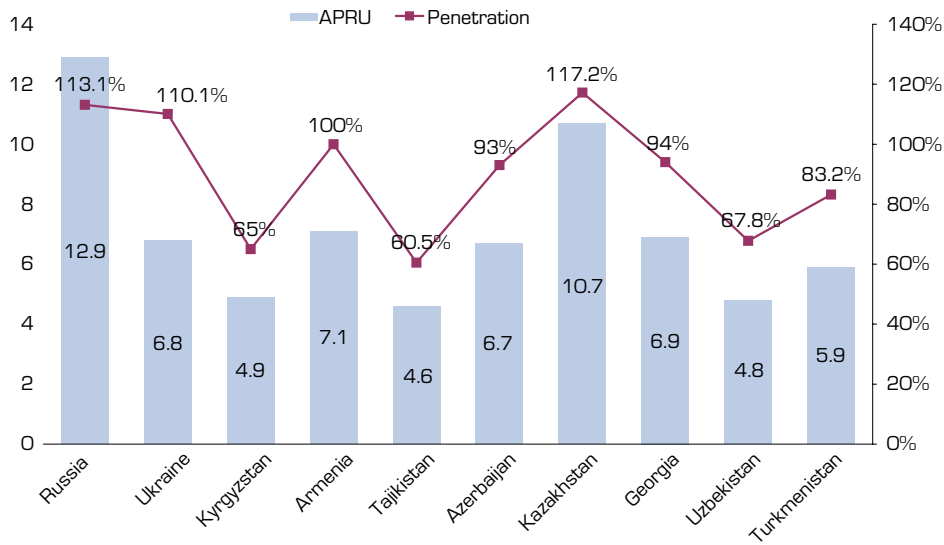
Figure 2.5.
Forecast of average sale proceeds per user and penetration in 2015 ($, %)

Source: MTS; AC&M Consulting, CA–IB
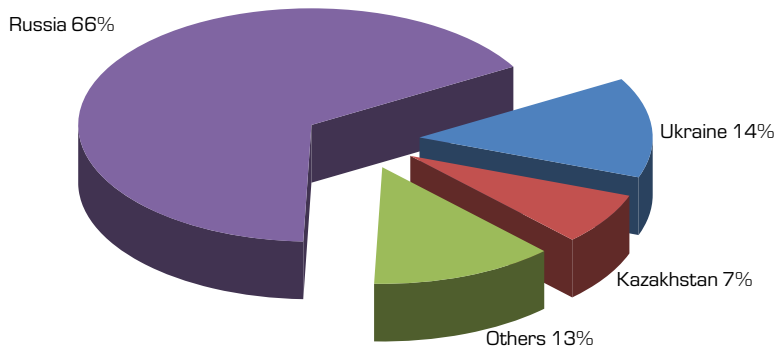
Figure 2.6.
Forecast of sale proceeds in CIS telecommunications market in 2015 (about $35 billion)

Source: MTS; AC&M Consulting, CA–IB

One of the ways to attract foreign capital is to privatise state telecom assets, because privatisation could open the monopolised fixed–line market of the CIS to private investors. At present the telecom companies are co–owned by governments in all post–Soviet countries except Armenia. Some countries have already made the first steps towards the privatisation of these assets.

The Kazakh operator Kazakhtelecom was the first state–owned company to offer its shares for sale. 51% of its shares are now held by the government via Samruk–Kazyna and 49% by private investors (Kazakhtelecom, 2010). The controlling stake (51.3%) of Azerbaijan's leading operator, Azercell Telekom, is held by Azertel Telekommunikasyon Yatirim Dis Ticaret A.S., a subsidiary of Fintur Holdings B.V. All telecom assets in Armenia are in private ownership. In 2007 the country's main operator, ArmenTel Joint Venture, was sold to VimpelCom for $540 million, $52 million of which was paid to the government for its 10% stake.

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[4] See web–site: http://www.iguru.ru/Shares/Show.aspx?id=%7B5A5DDBE4–D38B–47EA–A9B3–DFD0BA4E2644%7D

The telecom companies of the eight post–Soviet states remain unprivatised. Whereas in Kyrgyzstan and Ukraine the sale of state assets is highly possible (the shares of telecom companies have been offered for sale), in other countries this process is likely to take many years. The last attempt at privatising Kyrgyztelecom was inconclusive due to the change of government in April 2010. This prospective transaction attracted interest from Turk Telekommunikasyon A.S. (Turkey), Axos Capital GmbH (Germany), Kazakhtelecom and Rostelecom.

The privatisation of the Ukrainian monopolist Ukrtelecom has long been the subject of speculation, but so far the controlling stake (92.79%) is held by the government. It is expected that the company will be offered for open bid at an initial 7 billion grivna[5] (about $882 million). The prospective bidders are Rostelecom, SKM, Deutsche Telekom, Telenor Group, Turkcell, Roman Abramovich's companies, Privat Group, Telekom Austria, Sistema Financial Corporation, VimpelCom, Bank of New York, UBS, Namura and others (Karpenko, 2010).

The privatisation of Uzbektelecom has lingered for a decade. The last attempt to sell a 49% stake was made in 2004, with participation of Golden Telecom, Sistema and China Mobile Communications Corporation as bidders. However the company is still owned by the government.

A similar situation can be observed in Belarus and Russia. In November 2009 the Belarusian Ministry of Telecommunications and Information Technology once again postponed privatisation of Beltelcom for at least two years. In it's turn, the reorganisation of Russia's Svyazinvest foresees the establishment of a single operator on the basis of Rostelecom (51% is owned by Svyazinvest, 30% by the Agency of Deposits Protection, 9.8% by Vneshekonombank, and about 10% of common stock and 100% of preferred stock is freely circulated) (Rostelecom, 2010).

A key point in the Svyazinvest reorganisation concept was an establishment of an alliance with one of the "big three" operators (MTS, VimpelCom or MegaFon), but no such plans are being discussed at present (Sergina, Bursak, 2010).

The privatisation of the Tajik operator Tochiktelecom have began in 2003, when the company was included in the government's strategic privatisation plan. However, there has been little progress so far. Kazakhtelecom has indicated its interest in bidding in case the Tajik operator will be offered for sale. As for Turkmenistan, no intention to privatise Turkmentelecom has ever been voiced (Shepovalnikov, 2009).

Table 2.2.
State telecom assets to be sold
Source: Shepovalnikov (2009)

Country	Assets	Package (%)	Estimated value ($ mln)
Ukraine	Ukrtelecom	67.79	882
Moldova	Moldtelecom	51	223.7
Kazakhstan	Kazakhtelecom	27	178.2
Uzbekistan	Uzbektelecom	49	115.3
Kyrgyzstan	Kyrgyztelecom	77.84	78.1
Azerbaijan	AzEuroTel Telecommunications	50	n/a
Azerbaijan	Ulduz Telecom	28	n/a

Another efficient strategy for attracting capital to the sector is to promote an alliance between the government and private companies (e.g., on the principles of private–public partnership). The benefit of private–public partnership is that the government retains control over the sector while considerably easing the burden on the state budget by involving external investors. In our view, private–public partnership schemes deserve more attention in the context of the

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[5] See web-site: http://biz.liga.net/news/E1003007.html

telecommunications sector, but their success will depend on the availability of an adequate legal framework.

We do not expect any large privatisation transactions in CIS countries during 2010–2011. The operators' activity is likely to be limited to individual investment projects to develop networks and new services. Subject to the success of these projects, the investors will be better positioned to claim larger stakes in privatised telecom assets, although we will not see the likes of the large-scale transactions of the past decade again.

2.2. Mutual investments in telecommunication by CIS countries

The recent years saw the rapid development of mobile communications and Internet services. The income of mobile operators skyrocketed from $19 billion in 1991 to $800 billion in 2007, and continued to grow. The operators' income structure has also changed over the past two decades: income from mobile communications increased from 5% to 50%, whilst income from fixed-line telephony dropped from 82% to 34%.

From the early 2000s the Russian telecommunications market was characterised by high levels of penetration of most services, which can be explained by the large population and relatively developed infrastructure. Foreign capital also played a role in this rapid growth. For example, the leading Russian operators MTS and MegaFon were co-founded by Deutsche Telecom, Siemens and TeliaSonera.

Although the domestic market was not yet fully saturated, Russian operators started to seek new opportunities for expansion. The markets of neighbouring countries which have close political and economic ties with Russia appeared to be ideal targets. The post-Soviet countries had much in common: high growth rates, relatively low basic penetration levels, and a similar business environment.

Moreover competition on these markets was relatively low, as local telecom operators were weak and international multinational companies showed little, if any, interest in them. To date out, of the 13 world Tier-1 operators (which have access to the Internet on a peer-to-peer basis, i.e. do not need to buy transit rights), only three are active in Russia and other CIS countries (TeliaSonera International Carrier has infrastructure, and Tata and Verizon Business have access nodes). According to a director of TeliaSonera, Tier-1 operators are not interested in the Russian and CIS markets. The reasons are the economic and geographic conditions of this region, namely, the high cost of infrastructure lease or purchase, construction difficulties, gaps in the tax law (free traffic exchange is not allowed) and imperfect regulation. For example, Russian law requires Tier-1 companies to build network control centres in Russia, whereas each of these companies has a single control centre (Konik, 2010).

Another incentive for Russian mobile operators to penetrate post-Soviet markets is associated with the so-called "follow your client" strategy. Many corporate clients from different economic sectors are already integrated with foreign market players (Lisitsyn et al., 2005). For example, LUKOIL participates in the development of oil deposits in Kazakhstan, Uzbekistan and Ukraine and sells hydrocarbons all over the CIS. LUKOIL and other corporate clients of mobile operators need sustained communications with their overseas branches. In 1992 Gazprom founded Gazcom to serve its corporate needs (later was renamed Gazprom Space Systems). Apart from Gazprom, the co-founders of Gazcom are the Energiya Korolyov Research & Production Group and Gazprombank. Gazcom provides satellite communications services to all Gazprom businesses, state-owned companies, governments of Russian regions, and commercial users (see Figure 2.7). The company intends to launch three high-elliptical orbit communications satellites (the Pole Star project). To date Gazprom Space Systems services practically the whole Eurasia. However, such expansion should be classified as internal transnational telecommunications networks serving principally their parent companies' needs rather than the general public.
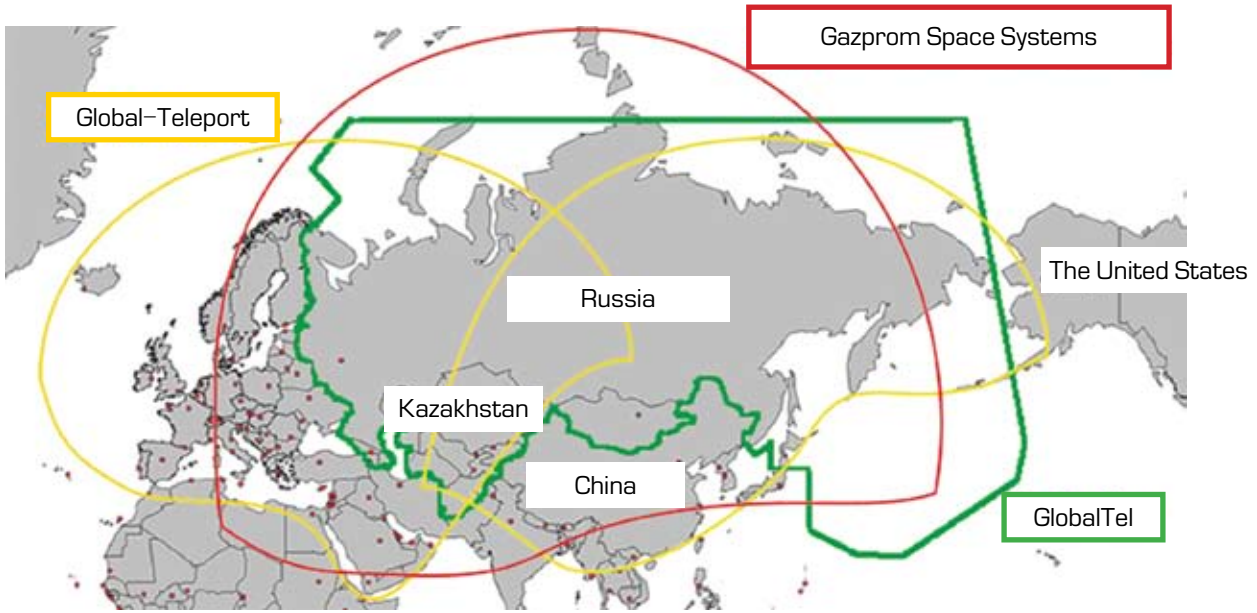
Figure 2.7.
Service areas of Russian
satellite companies

Source: Eurasian
Development Bank

Note: based on companies data

In an effort to expand their subscriber base and better serve the customers' needs, Russian operators started to penetrate international telecommunications markets in 2000 and made first steps towards a common CIS market. Merger and acquisition (M&A) deals between the local telecom companies became the key element of the penetration strategy. This practice is very popular in telecommunications as it foresees the use of the existing infrastructure and a subscriber base of the local operator being purchased. At present, major Russian mobile operators, including Mobile TeleSystems (MTS), VimpelCom (under the Beeline trademark) and MegaFon have established their presence in all CIS countries (see Figures 2.8 and 2.9 and Table 2.3).

Figure 2.8.
Mobile operators' shares
in Russia's subscriber base
(January 2010)

Source: Eurasian
Development Bank
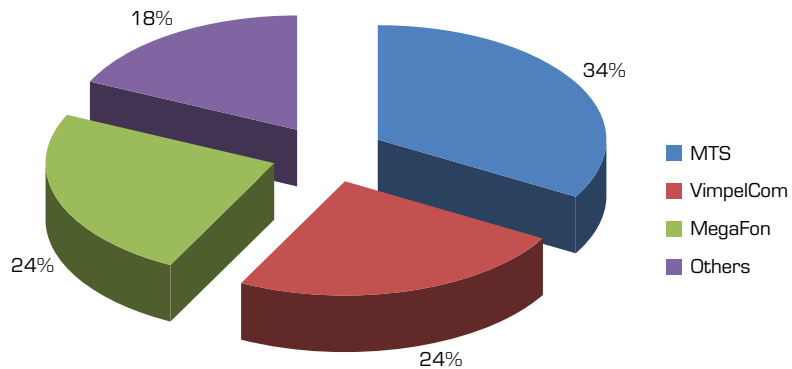
Note: based on data provided by J'son & Partners Consulting
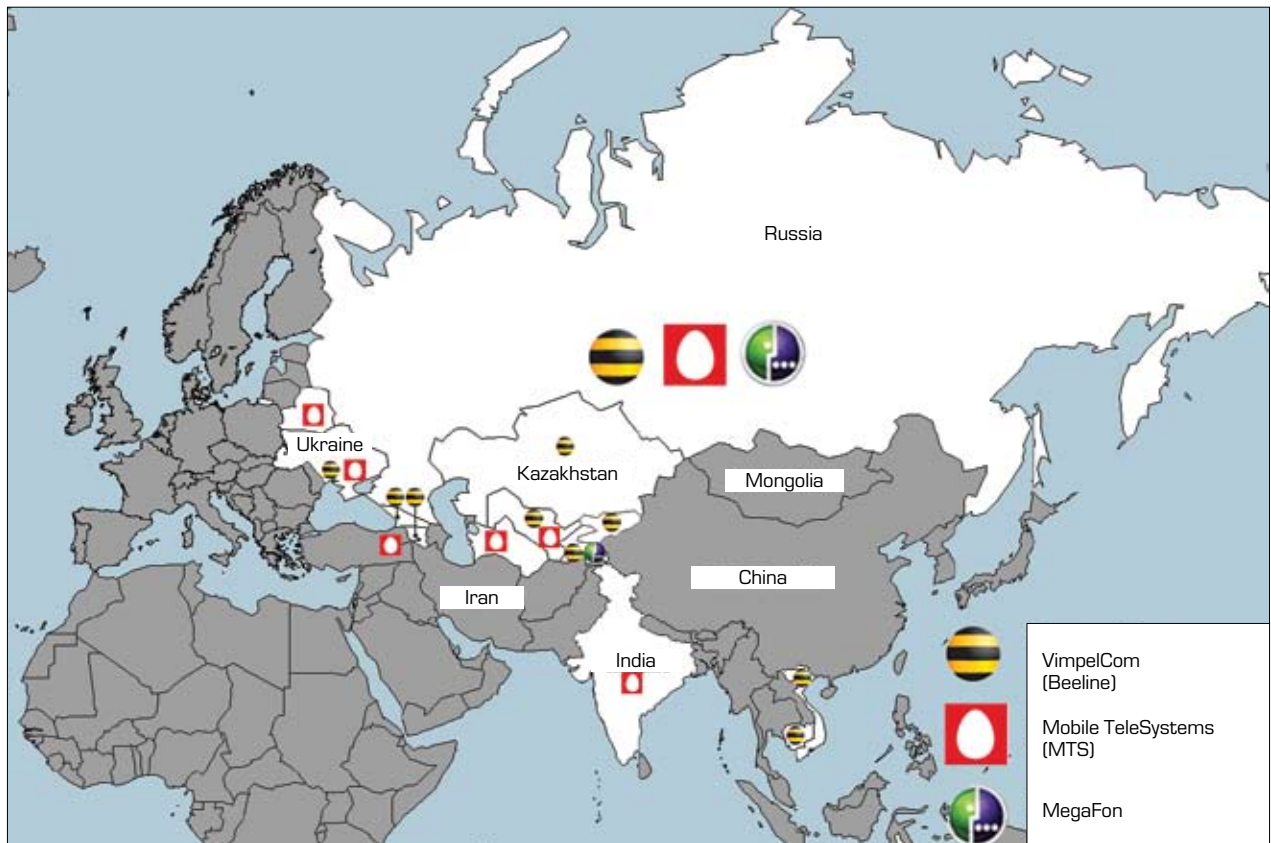
Note: based on companies data

Figure 2.9.
Service area of Russian
mobile operators

Source: Eurasian
Development Bank

As of April 2010, VimpelCom took the lead in terms of increase of subscriber base geography. Its affiliate under the Beeline trademark offers mobile and fixed–line services and high–speed wireless and broadband Internet access in Russia, Kazakhstan, Uzbekistan, Ukraine, Tajikistan, Georgia, Armenia, Vietnam and Cambodia (since 2008) (see Figure 2.9).

The company first appeared on the international market in August 2004, when VimpelCom bought Kazakhstan's second largest mobile operator, KaR–Tel (which offered services via the K–Mobile and Excess trademarks until June 2007). The deal was priced at $350 million; in addition, VimpelCom assumed KaR–Tel's liabilities at a total of $75 million. As a result, VimpelCom accessed the 600,000 subscribers of the purchased company.

As of January 1, 2010 the Beeline subscriber base amounted to 6.135 million clients (VimpelCom, 2009). During the company's six–year presence in the country it increased ten–fold.

On November 11, 2005 VimpelCom signed an agreement on acquisition of a 100% stake in Ukrainian Radiosystems for $231 million. On December 29, 2005 VimpelCom announced an acquisition of 60% of shares in Tacom, a Tajik mobile operator, for $12 million. In early 2006 the company entered the Uzbek mobile market by purchasing two leading operators, Buztel and Unitel, for about $270 million. In November 2006 VimpelCom entered Armenia by acquiring ArmenTel, a mobile and fixed–line operator (90% of shares was purchased from Hellenic Telecommunications Organisation SA (OTE) and 10% from the Armenian government). In the same year VimpelCom announced the acquisition of Mobitel in Georgia. In March 2007

2. Investments in CIS telecommunications sector

Operator	Year	Country	Transaction price ($ million)	CAPEX ($ million)	Stake (%)	Description of transaction
MegaFon	2001	Tajikistan	joint venture		75	Establishment of a joint venture with Tajiktelecom, using the TT–Mobile brand
MTS	2002	Belarus	joint venture	40.26	49	Establishment of a joint venture with Beltelecom and MTS
MTS	2003	Ukraine	373	2974.5	100	Acquisition of Ukraine's leader, UMC
VimpelCom	2004	Kazakhstan	350	518.64	100	Acquisition of Kazakhstan's second largest operator, KaR–Tel. VimpelCom assumed liabilities of $75 million
MTS	2004	Uzbekistan	121	739.4	100	Acquisition of 74% of shares in Uzdunrobita, and 100% in 2007
MTS	2005	Turkmenistan	47	158.4	100	Acquisition of Barash Communications Technologies, Inc. (BCTI)
MTS	2005	Kyrgyzstan	150	0	51	Acquisition of a controlling stake in Tarino Limited, owner of Bitel
VimpelCom	2005	Ukraine	231	205.2	100	Acquisition of Ukrainian Radiosystems
VimpelCom	2005	Tajikistan	12	52.2	60	Acquisition of Takom
VimpelCom	2006	Georgia	13	44.70	51	Acquisition of Mobitel, member of GMC Group, with the option to purchase the remaining 49%. Contract with Alcatel for the construction of a new GSM/GPRS/EDGE network
VimpelCom	2006	Uzbekistan	260	213.2	100	Acquisition of Buztel and Unitel, assumed Unitel's liabilities of $7.7 million and Buztel's liabilities of $2.4 million
VimpelCom	2006	Armenia	539.7	88	100	Acquisition of 90% of shares in ArmenTel from Hellenic Telecommunications Organisation SA for $487 million and the remaining 10% from the Armenian government for $52 million. VimpelCom assumed liabilities of €40 million
Altimo	2006	Kyrgyzstan	10	n/a	100	Acquisition of Sky Mobile from US–Kyrgyz joint venture Katel. Sky Mobile purchased Bitel's (51% held by MTS) fixed assets, rights and liabilities to clients
KOMSTAR	2006	Ukraine	joint venture	n/a	50	Foundation agreement with Neotel (Ukraine) on joint management and development of the subsidiary Komstar Ukraine
KOMSTAR	2006	Armenia	not disclosed	n/a	75	Acquisition of Callnet and its 100% subsidiary Kornet
KOMSTAR	2006	Ukraine	4.7	n/a	100	Acquisition of DG Tel and Technological Systems
MTS	2007	Armenia	425	97.1	80	Acquisition of K–Telecom (VivaCell trademark) with the option to purchase the remaining 20%
VimpelCom	2008	Kyrgyzstan	350	0	100	Acquisition of Sky Mobile via Kar–Tel's subsidiary
VimpelCom	2008	Russia	4240	0	100	Acquisition of 100% of share in Golden Telecom
MTS	2009	Russia	1272		51	Acquisition of controlling stake in KOMSTAR – United TeleSystems
Sistema	2007	India	58.1		74	Sistema Shyam Teleservices establishment of a joint venture between Sistema and Shyam Group[6] of India
VimpelCom	2008	Vietnam	joint venture	267	40	Establishment of a joint venture with Vietnamese state–owned company Global Telecommunications Corporation (GTEL)
VimpelCom	2009	Cambodia	28		90	Purchased 90% of shares in SOTELCO LTD

Table 2.3.
Russian operators' presence in overseas markets

Source: Eurasian Development Bank

Note: based on companies data

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[6] At the end of 2010 the Russian Government will acquire 20% in Shyam by partial conversion of the Indian debt.

VimpelCom began the commercial operation of a 3.5G (HSDPA) network in Tajikistan. Since then the company has begun to expand its coverage by building a new GSM/GPRS/EDGE network (Beeline, 2010). However, the strategy and economics of the mobile operators are largely determined by the Russian market (see Figure 2.10).
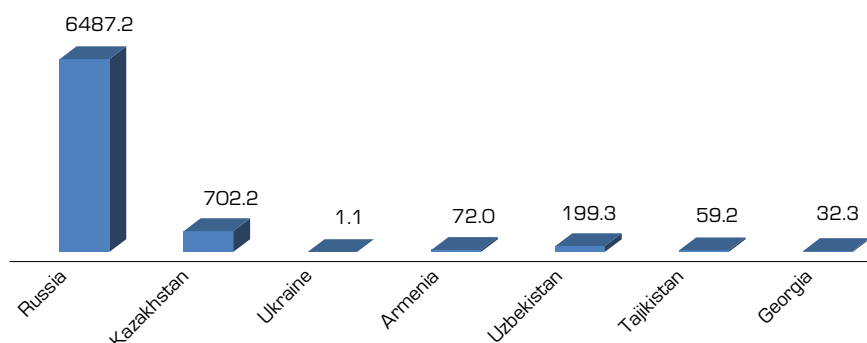
Figure 2.10.
Income of VimpelCom from mobile communications by country in 2009 ($ million)

Source: Eurasian Development Bank

Note: based on VimpelCom data (2010)

Country	2009	2008	2009/2008
Russia	619.1	1776.4	−65.1%
Kazakhstan	43.8	254.8	−82.8%
Ukraine	19.8	185.4	−89.3%
Armenia	9.7	78.3	−87.6%
Uzbekistan	36.9	176.3	−79.1%
Tajikistan	7.1	45.1	−84.3%
Georgia	9.5	35.2	−73%

Table 2.4.
Capital expenses of VimpelCom by country ($ million)

Source: Eurasian Development Bank

Note: based on VimpelCom data (2010)
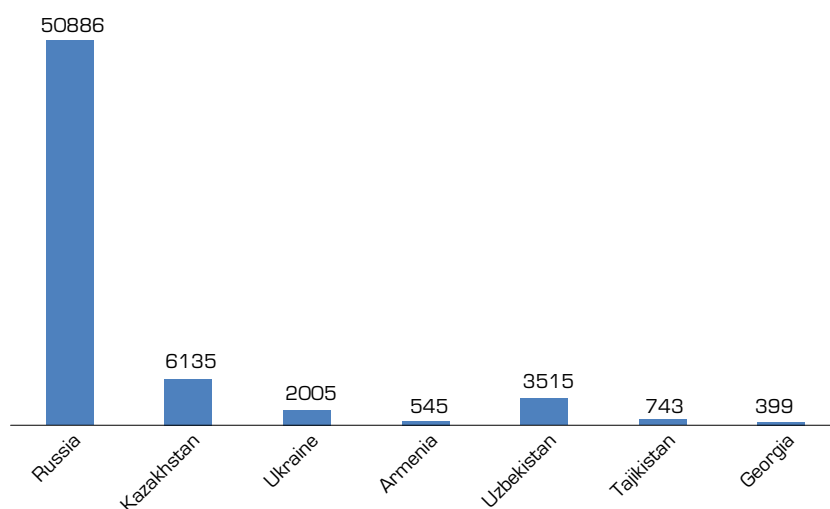
Figure 2.11.

Beeline's subscriber base (in 2009)

Source: Eurasian Development Bank

Note: based on VimpelCom data (2010)

Mobile TeleSystems has over 85 million subscribers in Russia, Armenia, Belarus, Ukraine, Uzbekistan and Turkmenistan (see Figure 2.12). MTS' expansion in CIS countries began with a Russian–Belarusian joint venture in autumn 2001. In August 2002 MTS purchased the Ukrainian mobile leader UMC. In 2004 MTS entered the Uzbek market by acquiring a 74% stake in Uzdunrobita, the largest Uzbek mobile operator. In 2005 MTS purchased Barash Communications Technologies, Inc. (BCTI) and began providing mobile services in Turkmenistan. In September 2007 MTS acquired an 80% stake in Armenia's largest operator K–Telecom (the VivaCell trademark) with the option to buy the remaining 20% (MTS, 2010).

Figure 2.12.

MTS' subscriber base (in the beginning of 2010 million people)

Source: Eurasian Development Bank
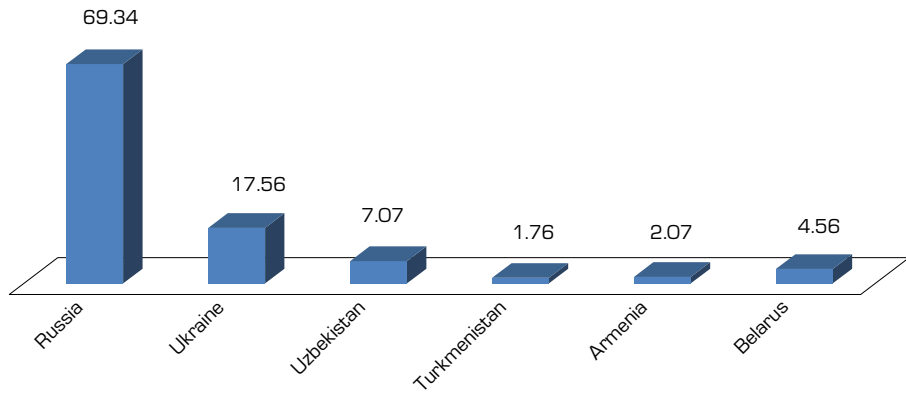
Note: based on data provided by Shamolin and Kornya (2010)

Figure 2.13.

Capital expenses of MTS by country ($ million)

Source: Eurasian Development Bank
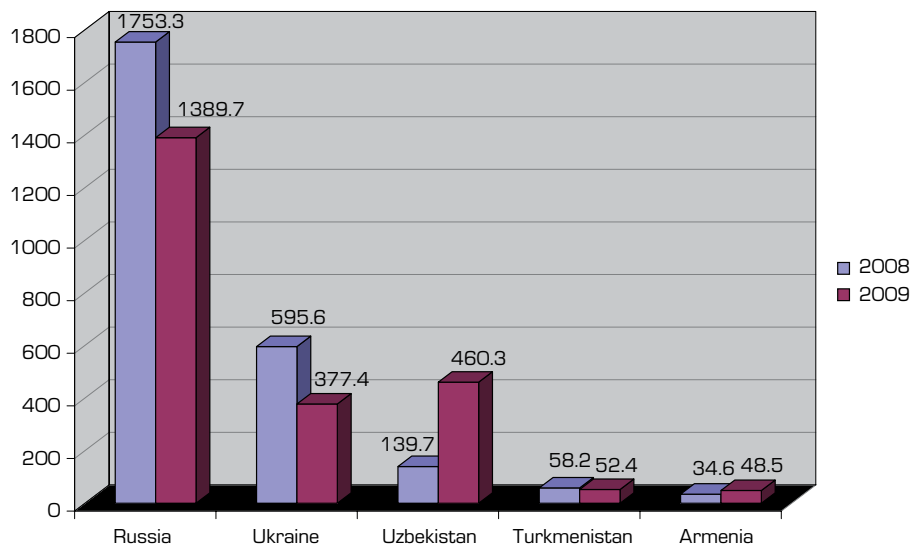
Note: based on data provided by Shamolin and Kornya (2010)
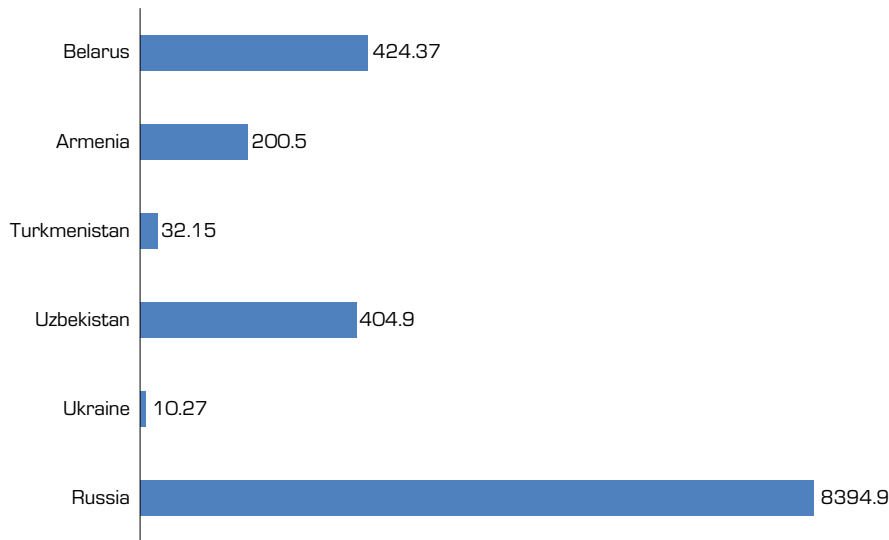
Figure 2.14.

Income of MTS
by country in 2009
($ million)

Source: Eurasian
Development Bank

Country	Value
Belarus	424.37
Armenia	200.5
Turkmenistan	32.15
Uzbekistan	404.9
Ukraine	10.27
Russia	8394.9

Note: based on data of Shamolin, Kornya (2010) and MTS (2010)

MegaFon has the most narrow business geography among the "big three" Russian mobile operators. The company operates in Tajikistan and owns a 75% stake in local TT–Mobile operator. However, MegaFon does intend to cover more overseas markets. According to its General Director Sergei Soldatenkov, the company is not interested in Ukraine or Belarus because of tough market competition. Georgia, Kazakhstan, Azerbaijan and Moldova are all dominated by Fintur Holdings B.V. (a joint venture of TeliaSonera and Turkcell). Therefore, MegaFon's targets are Armenia, Kyrgyzstan and Uzbekistan, the least penetrated mobile markets (Kepman, 2010).

Another prominent player in the Russian and CIS markets is Altimo (by 2005 known as Alfa Telecom), a member of Alfa Group. Altimo is an international investment telecommunications company which has stakes in MegaFon, VimpelCom, Kiyevstar G.S.M. and Turkcell Iletisim Hizmetleri A.S. (the latter operates in Ukraine, Georgia, Moldova, Kazakhstan, Azerbaijan and other countries through its joint venture Fintur). In 2009 Altimo's market capitalisation exceeded $16 billion (see Figure 2.15).
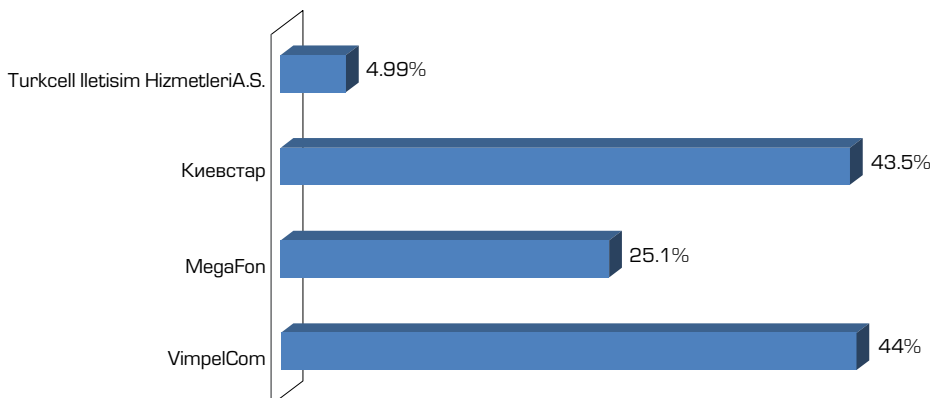
Figure 2.15.

Altimo's assets

Source: Eurasian
Development Bank

Company	Value
Turkcell Iletisim HizmetleriA.S.	4.99%
Киевстар	43.5%
MegaFon	25.1%
VimpelCom	44%

Note: based on Altimo data (2010)

In November 2009 Altimo announced a merger of stakes in MegaFon and Turkcell with TeliaSonera with a view to establish a leading international operator which will serve over 90 million subscribers in the CIS and Turkey.

Telenor and Altimo signed an agreement on merging their stakes in Vimpel-Communications and Kiyevstar G.S.M. (Bogapov, 2009) and establishing a new mobile operator, VimpelCom Ltd. The new operator provides integrated mobile and fix-line services in Ukraine and other CIS countries, Georgia, Vietnam, Cambodia and Laos. The venture will also target other rapidly growing markets in Europe, Asia and Africa.

Today many mobile and fixed-line Internet access providers have entered the triple play market (provisioning of Internet access, television and telephone services over a single connection). Fixed-line operators have a number of advantages over mobile operators, as they possess the infrastructure required for video transmission (Yefanov, 2008).

A brilliant example of conquering new market segments was VimpelCom's purchase of Golden Telecom for a record $4.3 billion in 2008 and purchase of KOMSTAR Unified TeleSystems by MTS in 2009. Therefore, VimpelCom and MTS entered the market of broadband Internet services and evened up scores with fixed-line operators (see Figure 2.16).

Figure 2.16.

Income of VimpelCom from fixed-line services by country ($ million)
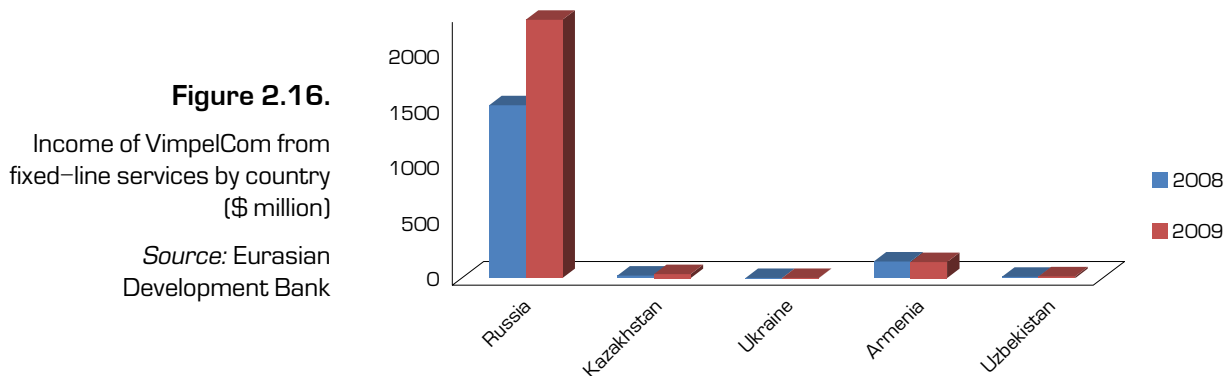
Source: Eurasian Development Bank

Note: based on VimpelCom data (2010)

The interest of the "big three" in alternative fixed-line operators can be explained by the high demand for Internet services coupled with low competition. The structure of the Internet market is generally identical in all CIS countries (except Russia and Ukraine): a large number of small local providers and one monopolist controlled by the government that owns all trunk networks.

Apart from mobile operators, there are a number of alternative Russian Internet providers on CIS markets. For example, KOMSTAR Unified TeleSystems Group (established in 2004 via the merger of KOMSTAR, MTU-Infor and Telmos) is a leading Internet provider in Russia, Ukraine and Armenia. The group has aggressively invested in telecommunications in other post-Soviet countries. For example, in 2008 it fully financed and launched the world's first national wireless WiMAX network in Armenia.

The Internet market in the CIS is largely underdeveloped and non-transparent, but the situation is likely to change dramatically in the near future. First, new 3G networks will create a completely different environment; second, the consolidation of CIS markets will inevitably lead to the emergence of transnational operators.

The market analysis shows that the most lucrative segments of the ICT in the CIS, such as mobile communications, have been long dominated by Russian players. On the other hand, de-monopolisation of telecommunications opened CIS markets to large European TNCs which now hold up to 100% of shares in various structures. It is very likely that the same players will buy up the remaining state-owned telecom assets, should Russian companies fail to qualify for such costly transactions.

Bearing in mind the extinction of the traditional technology principles and enormous profitability of mobile services, any future scenario will be shaped principally by the corporate will of shareholders of leading Russian operators. Events like the recent merger of the assets of Telenor and Altimo suggest that the monopolisation process at a regional level is entering its final phase, and no new competitors should be expected to appear on the CIS market in the next few years.

Any prospective M&A transactions will depend on the preferences of large shareholders, notably, Telenor and Altimo. However, this process will merely result in a change of name or organisational structure, and the subscriber base will continue to increase even more.

As a conclusion, the market is nearing saturation (in terms of the number of subscribers), and investors are making attempts at a breakthrough by introducing highly integrated NGN capable of boosting regional and global traffic, which will result in a better use of the existing capacity.

3. Region's transit potential

3.1. International fibre optic lines

ICT development must accommodate the growing needs of individual countries and the world community as a whole. A new concept called "information economy" has emerged – that is, the global network of information flows which unite distant regions into a single space. A key feature of information technology is the so-called node and out-of-node spaces (see Figure 3.1).

Figure 3.1.

Node and out-of-node spaces

Source: Klyuyeva, Volkova (2008)

This division illustrates a region's integration into the global information economy. Node spaces generate the main information flows. The degree of a country's integration into the world information economy largely determines its economic, social, technical and cultural development. The node spaces in *Figure 3.1* are marked white. As we can see, the main node areas are North America, Europe, partially Southeast Asia, and Japan. CIS countries (with few exceptions) are located on the periphery and play a little, if any, role in generation or transfer of information. This phenomenon is called "the Asian gap"; it is caused by the geographic and demographic characteristics of CIS countries. The major part of Russia and Kazakhstan is under-populated and has a harsh climate (Klyuyeva, Volkova, 2008). CIS countries need a qualitatively new infrastructure which would unite and connect them to the world information community.

Post-Soviet countries occupy most of Eurasia; hence have a number of transit advantages, notably, the absence of an alternative short route for data transfer from Asia to Europe (Klyuyeva, Volkova, 2008). There is already a clear understanding of the need to realise this transit potential. The President of the Republic of Kazakhstan Nursultan Nazarbayev said: "We are interested in building transcontinental transport and communications arteries which will stimulate the development of Kazakhstan and the whole of Central Asia alike, and the transformation into a self-sufficient chain in the trade and economic relations between the main world markets" (Nazarbayev, 2007).

Data transit services foresee the lease of communications channels. Therefore, the ownership of a fibre optic communications line (FOCL) is the major condition for the country's or region's competitiveness on the international data transfer market (Shmelyov, 2006). At present, due to the limited throughput capacity of overland routes from Europe to Asia, the lion's share of data traffic bypasses the CIS via two oceans and the US territory.

The existing trunk lines linking Europe to Asia are (see Figures 3.2 and 3.3):

- FLAG (Fibre–Optic Link Around the Globe) which transfers data by submarine cables via the Mediterranean and the Red Seas and the Indian Ocean. It has a length of 24,000 km;

- TAT (Trans–Atlantic Telephone cable) is laid via the Atlantic Ocean, the USA and the Pacific Ocean, total length exceeds 25,000 km;

- SEA–ME–WE (South–East Asia–Middle East–Western Europe) – a submarine FOCL with a length in of over 20,000 km. It links Western Europe, Africa, Southeast Asia and Australia;

- TAE (Trans–Asia–Europe FOCL) – an overland FOCL with a length of 27,000 km; it connects Shanghai with Frankfurt am Main. Generally it follows the ancient Silk Road and goes through Kazakhstan, Kyrgyzstan, Uzbekistan, Tajikistan, Turkmenistan, Azerbaijan, Georgia, Armenia, Iran, Turkey, Pakistan, Afghanistan, Romania, Ukraine, Belarus, Poland, Hungary, Austria, China and Germany;

- TSCL (Trans–Siberian Communications Line) has a length of 17,000 km; it goes through Russia and has links to the TAE. The construction of the TSCL enabled Russia to directly access the global telecommunications system via European countries;

- ERMC (Europe – Russia – Mongolia – China) – a network covering the listed countries and the shortest data transfer route from Europe to Asia;

- Eurasiahighway – the successor to the ERMC with larger geographic coverage and throughput capacity. In 2007 the TTC and NTT Communications of Japan completed the construction of a submarine cable system connecting Russia with Japan;

- Sinterra group trunk line network with a total length of over 75,500 km has a 45% share in the Russian market of Internet providers;

- the trunk line of Golden Telecom and VimpelCom with a length of over 70,000 km.
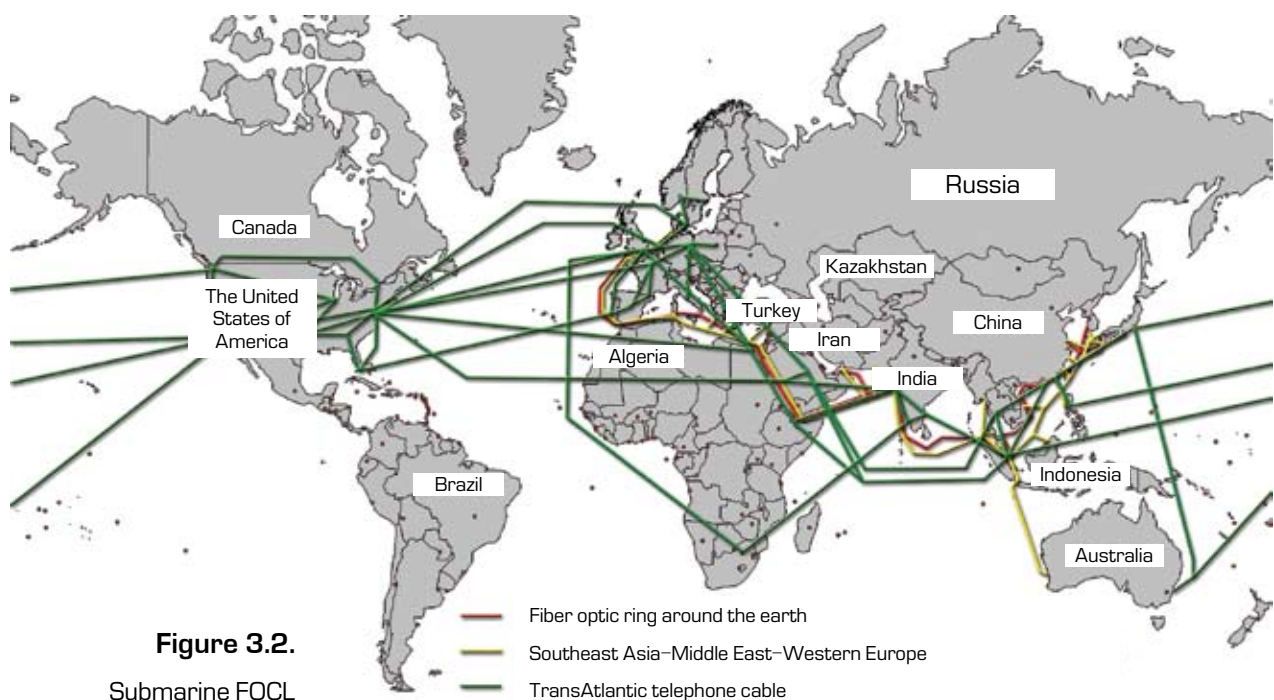
Figure 3.2.

Submarine FOCL

Source: Eurasian Development Bank

Note: based on company data

Legend:
- Fiber optic ring around the earth
- Southeast Asia–Middle East–Western Europe
- TransAtlantic telephone cable
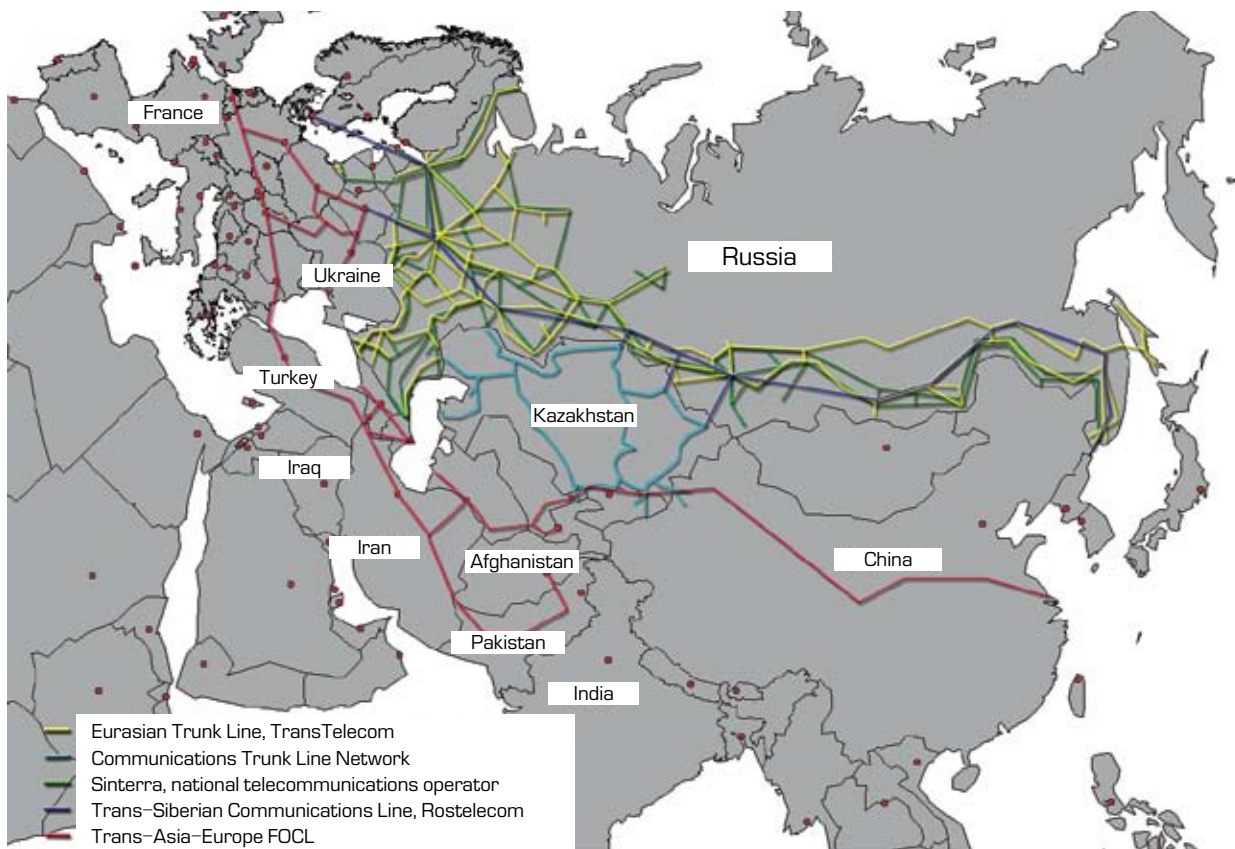
Figure 3.3. *Note:* based on companies data

Overland FOCL

Source: Eurasian
Development Bank

Due to its architecture, the global information infrastructure based on trunk networks requires permanent connections all over the world. Therefore, the actual geography of data traffic from one subscriber to another is of no importance. An IP call from Kazakhstan to Moscow may go, for example, via Australia or Frankfurt – this is a matter of the current throughput conditions. The choice of technology is dictated by commercial interconnect contracts between world operators. The main reason of bypassing CIS countries is a lack of technical capability and individual operators' agreements necessary for transferring data in a particular direction.

The architecture of the global information infrastructure comprises developed and underdeveloped network segments which can be based on different technology. The resulting structure represents the primary phase of global NGN development. Any new trunk lines, irrespective of their architecture or technology, essentially are build upon the existing infrastructure.

According to experts, in 2008–2009 the annual increase in the global data traffic was 280%, which is expected to double each year in the next five years[7]. This increases the importance of a country's integration into the global information space and, on the other hand, opens new opportunities to generate income for countries with transit potential (i.e. advantageous geographic position and possession of high–capacity trunk lines).

Actually, six of the existing nine transit lines are laid in CIS countries, and five of them go through Russian territory, circumventing other CIS countries. According to ComNews Research, Russia

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[7] See web–site: http://www.cnews.ru/news/line/index.shtml?2010/03/25/384283

handles about 6% of all data traffic from Europe to Asia (Yankee Group estimates Russia's share at 16%, but this figure includes both transit and "consumed" data). Evgeny Sekerin, Director of Sales of Rostelecom, says that this situation developed due to the absence of a reservation capacity on the Asia–Europe route[8].

Russia occupies one ninth of the world's terrestrial territory and is well positioned on the data transit market. First of all, a route from Europe to Asia may achieve minimum length and enable maximum data transfer speed (because of absence of delays in the signal transmission). Each thousand kilometres generates a delay in data transfer of 10 ms (Yesaulenko, 2006). For example, a permissible delay for VoIP voice transfer is 160 ms, whereas round–trip delay in the trans–Indian and trans–American routes is up to 300 ms and 320 ms, respectively (Konik, 2010). Another advantage of the Russian route is that the cable will be laid in a single country, hence minimum problems with data transfer. Finally, repairs after an accident can be made much faster than in the case of a submarine cable. For example, it takes a maximum of four hours to repair a cable for Russian operators (Rostelecom, 2010) – an impossible time span for underwater work.

In veiw of the rapid growth of the Indian and Arab markets, the construction of Europe–India and China–India routes is promising. These lines can pass through the territory of Central Asian countries.

The only trunk line which goes through all CIS countries except Russia is the TAE. This route, however, has a number of disadvantages:

- it goes through many countries which complicates traffic control and increases costs;
- political instability in some countries (Afghanistan, Georgia, Tajikistan);
- most of the Asian section does not have a parallel emergency line (Klyuyeva, Volkova, 2008).

Parallel emergency lines are a prerequisite for successful competition in the transit market. To achieve this, operators should build their own parallel lines or have secure agreements with other fixed–line players.

3.2. Integration initiatives of CIS countries in data traffic

As can be seen from global practices, the driving element of any industry, including telecommunications, are any forms of partnerships and strategic alliances, and their concentration and quality determine market growth rates.

Therefore the historic unity of the CIS countries, their Soviet past, close political, cultural and economic ties contribute to the development of telecommunications market and strengthen integration processes.

One of the leaders on Russian fixed–lined telephony market, Rostelecom, has a backbone network, which covers the whole territory of Russia. In 1997–1999 the company completed the construction and put into operation a new fibre–optic line, which linked Russia with Ukraine and Belarus. In 2000 Rostelecom commissioned Rostov–on–Don – Lugansk FOCL, that interconnected Ukraine and Russia. Therefore, Russia entered the European communications markets. In 2002 the company completed the construction of a new Russia – Kazakhstan FOCL. In 2006 Rostelecom together with Beltelecom completed the installation of the optic cables, interconnecting them in the near–border area. Rostelecom has access to other CIS countries, including Tajikistan (via Uzbektelecom and Vavilon–T companies), and Azerbaijan (via Delta Telecom) (see Figure 3.3) (Rostelecom, 2010).

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[8] Redundancy (also "doubling") of routes: traffic routing in telecommunications networks (which consist of nodes interconnected by channels and have a complex topology) is based on shortest (main) ways. Redundancy enhances the reliability of a network, and in the event of an accident traffic is redirected to parallel ways.

In July 2008 the board of directors of Rostelecom approved the company's development strategy for 2008–2012, according to which the company planned to enter the markets of the CIS, India, China and the Middle East by buying local operators. According to the analyst of Finam Management, the company's total assets are estimated at $4 billion (based on 100% of company purchases) (Yerokhina, Khodonova, 2008).

Rostelecom is also considering buying Azerbaijan's Aztelecom (it is planned first to merge this company with Baku Telephone Communications and then privatise them as a single entity); Belarus' Beltelecom (a foreign investor's stake may not exceed 49%); Uzbektelecom (49%); Kazakhtelecom (51% of shares is held by the Kazakh government) and Kaztranscom; Ukrtelecom and Farlep (Ukraine) (Nemkovich, 2008). Rostelecom is interested in building the Aktau–Baku, Baku–Turkmenbashi, Georgia–Turkey and Georgia–Ukraine lines and the *Two Valleys* project to construct a trunk line to China (Yerokhina, Khodonova, 2008).

In 1996 Rostelecom and Globalstar L.P. (an international consortium of Loral Space & Communications, New York, and Qualcomm, San Diego) founded a new mobile and fixed-line satellite system operator, GlobalTel. At present the company has 48 low-orbit satellites and covers 11 countries, including northern and eastern seas and part of the Pacific (see Figure 2.7).

Another large participant of the telecommunications services market is TransTeleCom. Its majority shareholder is Russian Railways (a 100% state-owned company). In 2007 MTS Ukraine, a subsidiary of MTS, and TTC announced the commissioning of a new FOCL linking Kazachya Lopan, Ukraine, with Krasny Khutor, Russia. Yuzhural TransTeleCom, a subsidiary of TTC, provides telecommunications services in North Kazakhstan and has a branch in Minsk. In 2008 TTC and Delta Telecom of Azerbaijan began commercial operation of an inter-network connection at the Azeri–Russian border near Samur Yalom. Since 2003 TTC has been working on construction of a unified ITC complex of Russia, CIS and Baltic countries (TTC, 2010).

Russian Sinterra group owns a number of trunk lines and has access[9] to other CIS countries; particularly, it operates an interconnection near Velizh jointly with Beltelecom (each operator laid a section to the border). The companies made the necessary trunk lines available to each other, through which they transmit inter-network traffic in Russia and Belarus[10]. Together with Kazakhtelecom Sinterra also operates an interconnection near Uralsk.

The group has plans to expand its presence in Asia by implementing the C-Ring project ("Caspian Ring" – a telecommunications network around the Caspian) in partnership with Iranian, Azeri, Kazakh and Turkmen operators. To this end, a joint venture with Azertelecom, C-Ring Telecom, was founded on a parity basis, which in turn co-founded C-Ring Iran together with Iranmobin Electronics Development Company. Similar joint ventures will be founded in Kazakhstan and Turkmenistan. According to the company's Director General, Vitaly Slizen, the company does not sell basic telecommunications services (e.g. provisioning of channel capacity), but promotes innovative packages (DPC, GRID technology, TV, software on demand, etc.) (Serova, 2010). The company plans to widen its pool of partners by attracting operators from Turkey, Iraq, Kuwait, Saudi Arabia, the United Arab Emirates, Oman, Kyrgyzstan, Tajikistan, Pakistan, India, Armenia and Georgia.

In 2007 Sinterra entered the satellite communications market by acquiring Global-Teleport. According to a study by J`Son & Partners Consulting and data provided by ComNews group of companies, Global-Teleport has a market share of 32% and is the largest provider of satellite communications services based on VSAT technology (see Figure 2.7).

The VimpelCom group became one of the top three fixed-line operators in Russia following the acquisition of the alternative operator Golden Telecom in 2008, which transformed the mobile

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[9] Interconnection is a point of access or inter-network connection.

[10] See web-site: http://www.rosinvest.com/news/514379

operator VimpelCom into an integrated operator. The company now provides a wide range of telecommunications services based on its overlay networks in Moscow, Kyiv, St. Petersburg, Nizhny Novgorod, Samara, Kaliningrad, Krasnoyarsk, Almaty and Tashkent. In 2008 Golden Telecom and Kazakhtelecom commissioned a trunk line section connecting Samara with Uralsk (Golden Telecom, 2010).

MTS has also shown interest in new markets. At present the company operates a trunk line network with a total length of 34,500 km, including FOCL owned by KOMSTAR Unified TeleSystems and Eurotel.

Kazakhtelecom can become a major competitor to Russian operators in the CIS. As of August 2010, the market value of its shares traded on the KASE totaled 167.52 billion tenge ($1.137 billion), with 35% depreciation over the past three years[11].

Kazakhtelecom owns the National Information Super Trunk Line with a length of over 11,500 km (see Figure 3.3). The company also completed a number of long-distance trunk line NGNs. Moreover, Kazakhstan expanded its interconnection with Uzbektelecom at the Abai–Pakhta section (South Kazakhstan). The company initiated a pilot operation of an interconnection with Russian Sovintel and Sinterra at the Uralsk–Chernigovka section (West Kazakhstan). Kazakhtelecom also signed a memorandum on participation in Transit Asia–Europe project together with China Unicom and Golden Telecom (Kazakhtelecom, 2010).

In 2008 a consortium of Kazakhtelecom and LKat Invest of Kyrgyzstan expressed interest in acquiring the government's 77.84% stake in Kyrgyztelecom, but lost the bid to a consortium of K.S.D. (Kazakhstan), Nimisco Holding Co. Limited (Cyprus), Colimar Holding Co. Limited (Cyprus) and Ala–Too Keni (Kyrgyzstan). However, on April 20, 2010 the Kyrgyz Ministry of State Property cancelled the transaction[12], so Kazakhtelecom now has a second chance to buy the Kyrgyz operator.

Production of equipment for trunk lines may become a prospective area of international cooperation. Today the world leaders in this segment are Alcatel, CIENA, ECI, Huawei, Lucent Technologies, NEC, Nortel and Siemens (see Table 3.1).

Company	Package	TDM (max)	DWDM (brand)	DWDM speed (HB/s)
Alcatel	Optinex	STM–256	1640 WM	2400
CIENA	MultiWave	STM–64	CoraStream	2000
ECI	LightScape	STM–64	XDM–2000	800
Huawei	OptiX	STM–64	BWMS 1600	1600
Lucent	WaveStar	STM–256	OLS–1/6T	1600
NEC	SpectralWave	STM–64	SpectralWave 80CH	800
Nortel	OPTera	STM–256	LH 1600	1600
Siemens	TransXpress	STM–256	MTS–2	3200

Table 3.1.
Equipment for top–capacity trunk lines

Source: Mekkel (2005)

In recent years Russian companies are actively taking part in trunk line equipment production. Several enterprises that produce trunk lines equipment were established in Russia in the form of joint ventures with the leading international TNCs, such as Alcatel, NEC, Siemens, IskraTel (see Tables 3.2 and 3.3).

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[11] See web-site: http://www.kase.kz/ru/shares/show/KZTK

[12] See web-site: http://profit.kz/news/005767/

Year	Joint venture	Foreign partner	Russian partner
1994	IskraUralTel	IskraTel IskraTelling	Uralsk Electromechanical Plant, RAO EES
1996	Izhtel	Siemens	Meridian and others
1997	NEC–Neva	NEC, Mitsui, Sumitomo	Telecominvest
1999	Beto–Huawei	Huawei	Beto
1999	Alcatel	Alcatel	–
2000	Lucent Technologies	Lucent Technologies	Sistema

Table 3.2.
Production of
telecommunications
equipment with foreign
partners in Russia
Source: Slivka (2008)

System	Total market size in 1999–2010 ($ billion)	Russian share	TNC active in the segment
Commutation	5–7	30–40%	Alcatel, Siemens, NEC, Ericsson, Lucent (Avaya), Huawei, Nortel, Samsung
Traffic networks	3	20–25%	ECI, RAD, Nortel, Siemens, Lucent, ZTE, Huawei, Cisco Systems, Ericsson
Satellites	1.5	5%	Motorola, Ericsson
Radio relay lines	1.6	30%	Motorola, Ericsson, Siemens
Digital access networks	3	25%	Lucent, ECI, RAD, Cisco Systems, Huawei
Data transfer and the Internet	12	–	Lucent, ZTE, Cisco Systems, ZTE, Siemens
General mobile communications	10	10%	Alcatel, Siemens, NEC, Ericsson, Lucent, Huawei, ZTE, Samsung, Motorola, Nokia
Corporate mobile communications	4	15%	Motorola, Ericsson, Nokia
Customer equip-ment	7	5%	Alcatel, Siemens, Ericsson, Huawei, Samsung, Motorola, Nokia

Table 3.3.
Size and segments of
telecommunications
equipment market
in 1999–2010 (forecast)
Source: Slivka (2008)

Establishment of joint ventures is an important step towards the modernisation of telecommunications, as this sector is very science– and capital–intensive. To date, the top ten TNCs (none of which is a CIS company) control over 70% of the market (Slivka, 2008). Requirements for such equipment are becoming increasingly higher (especially as it concerns efficiency and the ability to adapt to new service packages), and this promotes competition and the adoption of new technology.

3.3. Satellite communications: prospects of cooperation

Another important segment of the telecommunications market is satellite communications. The main function of the telecommunications industry is to link individual countries or regions to the global information space. This goal is achieved by various means, e.g. overland lines: wire (copper, fibre optic) or wireless (radio Ethernet, cellular networks). However, this decision is not always economic, especially in under–populated or remote areas. Overland channels have a number of disadvantages: limited territorial coverage, technical and economic problems in connection with network modernisation, need to build special networks, re–equip, etc. An optimum solution could be the use of satellites as retransmission stations. The satellite communications market has the following main segments (Bukin, 2008):

• VSAT (Very Small Aperture Terminal) – satellite communications services based on terminals with a small antenna (1.2–1.8 m);

- SCPC (Single Channel Per Carrier) – a satellite communications system with a dedicated channel and a through connection;

- Capacity leasing – launching satellites or resale of other party's satellite capacity;

- Provisioning of teleport services to amplifying signals from broadcasting companies, placing hubs, organising trunk lines, etc.;

- System integration – selling equipment and building networks for other organisations.

According to Euroconsult, the world satellite communications market will continue to grow in the near future, whilst production and launching services will remain at the previous level (see Table 3.4). The satellite services market is highly concentrated: 73% of all income is generated by the five largest operators.

Index	1999–2008	2009–2018 (planned)	Growth rate (%)
Number of satellites	804	1185	47
Total weight (tonnes)	1591	2239	41
Satellites production market ($ billion)	78	118	51
Launching services market ($ billion)	41	60	46
Average cost per satellite ($ million)	97	99	2
Average launching cost ($ million)	51	51	0

Table 3.4.
Production and launch of satellites (all world programmes and orbits)

Source: Parfenov (2009)

According to Euroconsult, one–third of all operators' income in Russia and Central Asia is generated by the world leaders: Intelsat, SES Americom & New Skies and Eutelsat (see Table 3.5).

Company	Leased transponders		Income	
	Total (36 MHz)	Share (%)	Total ($ million)	Share (%)
GPKS	140	42	162	42
Intelsat	58	18	63	16
Gazcom	49	15	63	16
Eutelsat	37	11	49	13
JSC KazSat	16	5	14	4
SES	15	5	20	5
ABS	7	2	6	2
Others	7	2	8	2
Total	328	100	384	100

Table 3.5.
Structure of fixed–line satellite communications market in Russia and Central Asia (2008)

Source: Parfenov (2009)

To date, Russia uses 296 transponders[13] (for comparison, the US uses 1,450, Europe 1,040 and China 310). According to Dmitry Sevostyanov, General Director of Gazprom Space Systems, demand for satellite services exceeds supply by 30% (in the case of TV channels by 50%) (Parfenov, 2009). Communications operators currently sell all satellite capacity[14] before the satellite is actually launched. Experts forecast that, given the current launching plans (25–30 satellites worldwide per annum); this trend is likely to persist for the next 4–5 years.

Starting from 2013 Russian satellite group will be expanded by the launch of locally produced satellites. As a result, its capacity is expected to grow to 710 transponders in 2014 and 1,080 transponders in 2020. According to experts, the satellite production and launching costs will pay back in 2016, and an income of $10 billion will be generated in 2020 (SATRUS, 2009).

There are good prospects for international cooperation in the establishment and operation of the Russian global navigation satellite system (GLONASS) (Moldabekov, Vinokurov, 2010). The

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[13] Transponder is a device which sends a signal in response to a received signal.

[14] In satellite communications, capacity is a number of transponders, i.e. platforms on which receivers/transmitters are located.

GLONASS orbital group is intended for high-precision navigation and time support of ground, sea, aerial and space facilities worldwide. In May 2008, during the visit of the Russian President to Kazakhstan, an intergovernmental agreement on Kazakhstan's participation in GLONASS was signed (Yesentayeva, 2008). According to Russian Vice-Premier Sergei Ivanov, Kazakhstan and India (and Ukraine[15] since March 2010) will take active part in expanding GLONASS in their territories[16].

Another promising area of cooperation is the Russian low-orbit personal satellite communications system Gonets. This system is capable of transmitting data in the digital batch mode and can be used in areas with poorly developed infrastructure (Danelyan, 2007). The main advantages of Gonets is the ability to provide personal communications services based on comparatively cheap small satellite terminals and access to terminals located in all parts of the world. Russian-Kazakh cooperation under this project began in 1998 when the Kazakh segment of the system was created (a regional station of Gonets was built near Almaty). At present, Gonets and Kazkosmos are jointly implementing a project on the second stage of developing the Kazakh segment. On June 11, 2009 the representatives of Gonets and Kazakhstan Garysh Sapary discussed the prospective integration of the Gonets and Orbcomm satellite systems (the latter is the US counterpart of Gonets) (Gonets, 2010).

Kazakhstan also participates in a project to integrate and use the resources of Gonets and Orbcomm jointly with Ukraine. A ground station for low-orbit satellite communications will be built near Kyiv in order to expand coverage to all of Eurasia. Communications services based on the integrated Gonets-Orbcomm system in Ukraine are provided by the Ukrainian-Kazakh joint venture, Orbita[17].

Kazakhstan has also entered the international satellite communications market. Russia has provided orbital and frequency resources to Kazakhstan on a free basis for 15 years, Kazakh satellite intends to provide services to Central Asian countries and Central Russia. As part of *The Development of the Space Industry by 2020* national programme, Kazakhstan will allocate at least $6 billion to development projects. In December 2010 the second Kazakh satellite, Kazsat-2, will be launched.

Kazakhstan has already had bitter experience in this field: on June 8, 2008 the first Kazakh satellite Kazsat-1 became inaccessible. The operation of Kazsat-1 brought the country an income of about $20 million, but the construction cost stood at $65 million, not to mention the costs associated with the emergency situation (Astel alone estimated its losses at 49 billion tenge) (Kuanshaliyev, 2008). However, according to Talgat Musabayev, director of Kazkosmos, Kazakhstan can recover up to 70% of the satellite's value through insurance payment.

Azerbaijan also plans to launch a national communications satellite. According to Ali Abbasov, Minister of Communications and Information Technology of Azerbaijan, the American company Orbital Sciences Corporation had already completed construction of the Azerspace satellite. The Ministry of Communications and Information Technology is now negotiating the launch of Azerspace via a Zenit booster with Ukroboronservice. Azerbaijan intends to bring 80% of the resources of Azerspace to the international market (including 40% to Malaysia). The satellite will have three rays directed to Europe, Asia and Africa, which will boost its transit potential (Veliyev, 2010).

This high demand for satellite communications services in CIS countries can be explained by geographic and demographic characteristics (e.g. under-populated, remote or high-latitude territories), and the high concentration of transport and cargo flows (both internal and transit) which in turn requires ongoing control of the vehicle status (Danelyan, 2007).

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[15] See web-site: http://www.argumenti.ru/politics/2010/03/53576/

[16] See web-site: http://www.profit.kz/news/005554/

[17] See web-site: http://yaniv.net.ua/publ/1-1-0-2

4. Regional integration in CIS

4.1. Regional cooperation

An important driving force of cooperation in telecommunications in post–Soviet countries is the Regional Commonwealth in the field of communications (RCC) which was founded on December 17, 1991 in Moscow by the heads of national telecommunications administrations as a regional body, responsible for implementing ITU policy. The full members of the RCC are the telecommunications administrations of Azerbaijan, Moldova, Armenia, Russia, Belarus, Tajikistan, Georgia, Turkmenistan, Kazakhstan, Uzbekistan, Kyrgyzstan and Ukraine. The RCC's main strategic goal is to integrate into the global information community.

The development of a strategy for cooperation between the CIS member states in the field of information technologies and an action plan for the strategy's implementation for a period to 2010 became an important milestone in this process. Both documents were affirmed by the

Council of the CIS Heads of Governments on November 24, 2006. The main directions of the strategy are:

•   Establishment of a favourable environment for cooperation in ICT;

•   Harmonisation of laws and development of regulations and standards;

•   Development of new ICT segments;

•   Development of the ICT sector;

•   Enhancement of information security and implementation of measures for preventing cyber–crime and cyber–terrorism.

A number of projects are being successfully implemented, including:

•   Creation of a network for an information and marketing centre for promoting products and services to national CIS markets;

•   Establishment of compatible remote medical consulting and diagnostic systems;

•   Development of IT parks to help diversify the economy, boost it's innovative development as well as address the pressing social issues such as employment and creation of jobs requiring high intellect;

•   Provision of information security of newly created public systems and resources, especially information and telecommunications systems used for interstate data exchange (RCC, 2010).

The RCC is also considering a number of promising projects such as the Transnational Eurasian Information Super Trunk Line (TASIM) to connect Western Europe with the Pacific. The low throughput capacity of international Internet channels creates the risk of isolation of CIS countries from the global information community, which in the longer term will bear a negative influence on their socioeconomic development. Therefore, an adequate infrastructure must be in place to support international connections. TASIM will provide countries, which lie within its itinerary, with access to the Internet, telecommunication systems and information resources.

Most CIS countries and their neighbours will enjoy low rates for international traffic. According to the head of the telecommunications administration of Azerbaijan, the TASIM project will bring about an increase in Internet traffic, lower rates and better quality; just as importantly, it will foster the modernisation of telecommunications and accelerate economic development through online trade.

RCC characterises the TASIM project as an interstate initiative. Unlike the existing trunk line networks such as TAE, FLAG, SE–ME–WE or other types, which are essentially a product of commercial cooperation, the TASIM is aimed at the modernisation of telecommunications, especially in segments where the existing networks fail to support the actual or forecasted traffic volume.

Moreover, the TASIM project provides a technical basis for the implementation of the RCC policy on enhancing the availability of a wide range of telecommunications services to the public. Ultimately, the TASIM will become a fully commercial facility. Due to governmental participation operators from RCC member countries will be able to implement a social component of state policy. The TASIM may also become an additional source of traffic for existing trunk lines, as it will be integrated with them through interconnection agreements (based on information from the Telecommunications Without Borders Research Centre).

4.2. Corporate integration and formation of Eurasian TNC

Telecommunications saw the brightest success story in the post–Soviet space. Russian mobile operators saturated the domestic market and successfully proceeded with expanding their

business to other CIS countries (see Figure 2.9). Since 2009 the CIS market has been too narrow for the largest players. Eurasian companies have entered new markets in India, Vietnam and Laos, and MTS and VimpelCom are becoming Eurasian TNCs.

Eurasian exchange includes exchange of goods, ideas, technology and migration flows between the continent's regions. The past millennium can be loosely divided into three major periods of Eurasian exchange. The first period corresponds to the epoch of the Great Silk Road (11–13th centuries); the second was the European expansion (15–19th centuries). Currently we are witnessing the third period – the global economic, technical, political and cultural interaction. The modern wave of Eurasian exchange started as a one-way adoption of western technology and economic methods by East, South and West Asia and CIS countries. However, this exchange is increasingly becoming a two-way process. The key difference of the modern period is its distinct emphasis on technology (Vinokurov, 2010). In particular, the development of transport and ICT has amplified the intensity of exchange by dozens and hundreds of times, and telecommunications TNCs have become its main vehicles.

The fact that the largest players are purely private had a positive impact on their international competitiveness and activity. Liberalisation of telecommunications markets triggered a capital inflow in the sector, which in turn led to improvements in the quality of telecom services. An analysis of the world's major telecommunications operators in 1990–2000 by Yefanov (2008) shows that the main reason for the growth of the global information infrastructure was the promotion of new technology and the globalisation of communications operators, i.e. practically all large telecom companies are transnational. The liberalisation of developed markets and the emergence of cheaper technology fuelled competition and caused companies to seek new sources of income, often outside their home countries.

Heifetz and Libman (2007: 9) define corporate integration as a system of interconnections which emerges within the international intra-corporate space, with products, labour resources and capital in free circulation. Transnational corporations are trade enabling structures which strengthen the benefits of intraregional trade, thus promoting regional integration. Libman (2009) identifies the following tools of corporate integration:

- direct investments and development of production chains within jointly controlled structures;
- international alliances and long-term production cooperation;
- contacts with companies from different countries, which have a common large client.

The first two tools are especially efficient in the CIS telecommunications market. For example, direct investments proved its efficiency in mobile communications (VimpelCom, MTS, Altimo) and international alliances in fixed-line and satellite communications.

According to Danning's classic theory of globalisation, a company can enter international markets using the following strategies:

- export of products or services via distributors;
- export of products or services via its own structures;
- transfer of production assets;
- full-cycle production; or
- international integration of production assets.

The latter three strategies are more useful for strengthening integration. TNCs establish alliances with existing manufacturers of equipment in other countries in the form of joint ventures (e.g. in Russia) or by purchasing companies (the main strategy of Russian mobile operators in CIS countries).

As we have mentioned above, the most common model of integration in post–Soviet countries is corporate investments. It is based on the investment expansion of Russian and, to a lesser extent, Kazakh businesses. In the past decade Russian companies invested about $1.5 billion in mobile communications in the CIS (Libman, 2009).

Territorial proximity and common infrastructure is the basis of a market. In this context, the preserved ties between CIS economies and the ability to use the former shared infrastructure is of key importance. It can be safely said that a number of post–Soviet TNCs emerged due to the ties inherited from the Soviet period. Another precondition for investment integration is social integration: cultural similarities, common traditions and language, similar legal systems, preserved personal contacts, good knowledge of local conditions, and better understanding of the real political and economic situation, as well as similar management styles and organisational culture (Yudanov, 2000).

Investment flows are asymmetric, with Russian and (to a lesser extent) Kazakh capital playing the main role; the other CIS countries are essentially recipients. On the whole, the CIS has very few centres of formation of new TNCs and a large number of recipient countries (Libman, 2009).

The scale of private investment cooperation is considerable, but the financial crisis could create serious barriers to corporate expansion. However, it can also weaken national business groups' control over assets, thus promoting the corporate investments model (Libman, 2009).

Conclusion

The main goal of this industry review is to study the current status of the telecommunications sector in CIS countries and identify priority areas for economic, regulatory and technical integration within the region and globally.

Our analysis suggests that CIS countries are at the stage of entering the global information community. They are going through the same phases of national information community development that the US and the EU underwent in the 1990s (liberalisation of the telecommunications market, formation of TNCs, etc.). However, this process in the CIS has a number of specific features that can be explained by the region's economic, political and social characteristics. The common Soviet past of CIS countries largely determined the existing economic, political and personal ties and similarity of business environment. Finally, the development of the national information space was influenced by a severe economic and (in some countries) political crisis which also added specific features to the regional market.

CIS countries have great transit potential. This region lies on the shortest data transfer route from Asia to Europe, and data can be transferred at a maximum speed (as there are no delays in optic cable systems). However, at present this competitive advantage is not used to its full potential. CIS countries have already overcome most of the difficulties, and are now in a position to enter the world telecommunications market on equal terms with developed countries. Integration fosters the region's economic growth as it secures an inflow of new technology, capital and human resources. Corporate and formal integration also has a positive effect on the competitiveness of post–Soviet economies.

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Journal of Eurasian Economic Integration

The Journal of Eurasian Economic Integration is a quarterly academic and analytical journal published in Russian by the Eurasian Development Bank. The members of Editorial board and Advisory council are distinguished academicians, practitioners and experts in regional integration. Eurasian Economic Integration brings together academic and analytical articles, reviews of books relating to regional integration, interviews and quarterly chronicles of regional integration. With its focus on economics, the journal is a rich source of material addressing a broad range of issues specific to Eurasian integration. These include integration theory and its relevance to the development context; economic integration (trade, investment, financial institutions); institutional integration; cooperation issues in the post-Soviet space; and international experience of regional integration. The first issue was published in the third quarter of 2008.

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