

Mobile Telecommunications Landscape in Associate Candidate and Western Balkan Countries

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Abstract— The last few years the telecommunication market in Associate Candidate Countries (ACC) and Western Balkan (WB) countries has experienced a rapid growth in terms of mobile operators and penetration rates of mobile telephony. An overview on the mobile telecommunications evolution in the emerging markets of the ACC and WB countries in terms of penetration indicators is analyzed in this article.

Keywords: *Mobile Communications Indicators, Associate Candidate Countries, Western Balkans Countries*

I. INTRODUCTION

Over the last decade all South Eastern Europe (SEE) countries (Albania, Bosnia & Herzegovina, Bulgaria, Croatia, Former Yugoslavia Republic of Macedonia (FYROM), Greece Romania, Serbia and Montenegro, Slovenia, Turkey and Cyprus), have started to make an effort that involves a complete transition of their political, social and economic structures in order to build a democratic political system and a free market economy. More than 130 million residents, with different languages and religious beliefs, populate the SEE region, which is situated at the crossroads of three continents and of numerous cultures and traditions. These transitional efforts being common for all of the countries, each of them have specific characteristics and particularities. Some of the countries, as Slovenia and Cyprus fulfilled the criteria for joining the EU and became official members. While others, such as Romania, Bulgaria are expected to join in 2007, Croatia and Turkey still are preparing for negotiations with no clear date for membership set especially in the case of the latter. Likewise, Greece, even though geographically is a SEE country, politically and economically has been on a different path as a member of the European Union.

Based on IST work program, the mentioned countries can be divided into three categories: EU member states (Greece, Cyprus and Slovenia), Associate Candidate Countries (ACC) (Bulgaria, Romania, Croatia and Turkey) and Western Balkan Countries (Albania, Bosnia & Herzegovina, FYROM, and Serbia & Montenegro). Since the telecommunications market

in the countries of the EU member States has been well analysed in several studies, this article focuses on the development of mobile communications and the particular characteristics of the mobile market in ACC and WB countries.

The last few years the mobile communications market in the majority of these countries has experienced a rapid growth in exception to the other telecommunications infrastructures. This boom is due to the fact that compared with the fixed telephony, wireless telephony has a similar cost and it is easier to be installed. Moreover, these countries envisage that through mobile telephony they will be able to catch up the evolution in the telecommunication sector by leapfrogging some stages of development and decreasing in this way the “digital gap” between them and the European Union countries.

Even though there has been significant progress during the last years, telecommunications infrastructure in ACC and WB countries is still lagging in comparison with other developed countries. In addition, the existing regulatory framework is not adequate and in many cases it impedes further investment activity in the sector. The evolution of the mobile market in developing countries of other regions with monopolistic telecommunication infrastructure has similar characteristics. On the one hand the mobile market in these countries includes the first commercial CDMA network in Europe (Zapp Mobile in Romania), but on the other hand it reports the first failure in the European mobile GSM market (Cosmorom in Romania).

Although literature on the mobile telecommunications market in ACC and WB is limited, some authors have tried to analyze the telecommunications market environment in these countries. In [1], the Romanian telecommunications institutional reforms, as well as indicators of fixed telephony, mobile telephony, cable TV and internet are analyzed. The authors in [2] present the status and future development plans for the Serbian telecommunications infrastructure, markets and industry. In addition, [3] summarizes the status and expected near-term developments in the mobile telecommunications industry in Turkey. The IST SIBIS project [4] analysed the ICT environment in New Member States, including Bulgaria and Romania. Furthermore, the IST-MENTOR and the TRISTAN-

EAST projects [5] presented a generic analysis on the ICT development in these countries. However, these reports do not analyse the particular characteristics of the mobile market in the geographical area of our interest. There is no evidence of articles about the mobile communications market in ACC and WB countries in order to understand the current and the future market development in their cellular and fixed networks.

The remainder of the article is structured as follows: Section II presents the most important of the regional players in the mobile communications market. In Section III the mobile systems are presented while, the growth of the mobile communications in SEE is analysed in terms of penetration indicators in Section IV. A brief overview in the regulatory framework in SEE is given in Section V, whereas Section VI intends to present the road to 3G in some of the SEE countries.

II. REGIONAL PLAYERS

The constant growth of mobile market in these countries has drawn the interest of foreign telecommunications companies, which have proceeded in important investments. Currently, forty-one mobile operators are active in the region of study. Hellenic Telecommunications Company (OTE) is the most important player of the mobile telephony in SEE, as it can be seen from table I that presents the mobile operators in the WB and ACC countries, the mobile systems and the principal shareholders of each operator. OTE controls 100% of the mobile operators in Bulgaria, FYROM and Romania, while it is shareholder of the Albanian AMC and Telecom Serbian operators. Vodafone group is also an important player in this region, operating in Albania and Romania, whereas Telecom Italia operates in Croatia and Turkey and Deutsche Telekom in Croatia and FYROM (MATAV).

It is worth mentioning that the first failure in the European mobile GSM market is reported in Romania. Cosmorom, 100% owned by Rom Telecom (OTE), was the first GSM Romanian commercially launched operator in March 2000. At the end of 2003 Cosmorom had some 84.000 subscribers, 11.4% less than a year before. Besides decreasing in subscribers, Cosmorom reported losses and had problems with loan payments.

Likewise, it has to be noted that Kosovo, part of the Serbia & Montenegro territory, which is under United Nations supervision, has established an independent regulatory body and has launched two GSM licenses. The first one, Vala-900, is already been commercially operating since 2001. On March 2005 the Court in Kosovo passes a final judgment, ruling that the Telecommunication Regulatory Authority (ART) is to grant frequencies to Mobitel-Mobikos consortium for a second GSM license. The process of issuing this license was cancelled by ART in July 2004.

III. MOBILE SYSTEMS

GSM (900MHz and 1800MHz) [6] is the most popular mobile system in the region, with over 80% of the subscribers. However, some other analogue systems, NMT450 and NMT900, operate in Bulgaria, Romania and Croatia. Since these systems are well known in literature, they are not analyzed in this paper.

TABLE I. MOBILE OPERATORS IN ACC AND WB COUNTRIES

Country	Company Name	Status	System	Partnership
Albania	AMC	Private	GSM 900/1800	85% Cosmote GR,- Telenor ASA NO 15% Albanian State
	Vodafone	Private	GSM 900	51% Vodafone Group 49% Vodafone GR
	Eagle Mobile	State-owned	GSM 900/1800	100% Telecom Albania (Albtelekom)
Bosnia and Herzegovina	BH Telecom	Public	GSM 900	90% BiH State 10% Private shareholders
	Mobilna Srpske	Public	GSM 900	100% Telekom Srpske
	ERONET	Private	GSM 900	49% HT d.o.o., Zagreb, HR 51% HT d.d. Mostar, BiH
Bulgaria	Mobikom	Semi-Public	UMTS NMT450	100% Bulgarian Telecom (BTC)
	Globul	Private	GSM 900/1800	100% Cosmote (OTE Group)
	MobiTel AD	Private	GSM 900/1800	40% ABN AMRO Cap, Citigroup Inv. 60% founding shareholders
Croatia	Vipnet	Private	UMTS/GSM 900	100% Mobikom Austria
	T-Mobile	Private	UMTS/GSM 900	100% Deutsche Telekom
	Tele 2	Private	UMTS/NMT 450 GSM 900/1800	100% Tele 2 AB, Sweden
Turkey	Turkcell	Private	GSM 900	40.28% Cukurova Group 37.09% Sonera Holding 6.07% M.V. Group free float 16.33% and 0.23%.
	Telsim	Private	GSM 900	Turkish Government (takeover for debt resolution)
	TT-TIM (AVEA)	Private	GSM 1800	40% Telecom Italia Mobile (TIM) 40% Turk Telecom (TT) 20% Turkiye Is-Bankasi Group (ISBANK)
FYROM	Cosmofon	Private	GSM	100% Cosmote (OTE Group)
	MT Mobikom	Private	GSM	51% Stonebridge Com. MATAV 47,1% Government, 1.9% IFC
Romania	Connex GSM (Mobifon)	Private	GSM 900	79% Telesystem International Wireless, CA 21% Vodafone UK
	CosmoRom	Private	GSM 1800	100% RomTelecom (54.01% OTE, GR, 44.99% Government)

	Orange Romania	Private	UMTS GSM 900/1800	67.6% Orange 18.12% AIG, Societe Generale 14.28% polish investment funds
	Zapp Mobile	Private	NMT 450, CDMA 2000	94.53% INAQUAM SA others with less than 0.3% each
Serbia	Telecom Serbia	Semi-Public	GSM 900	80% PE PTT Serbia 20% OTE Greece
	Mobtel Srebjia	Private	GSM 900	51% BK Trade, Moscow, RU 49% Telecom Serbia
Montenegro	Monet	Public	GSM 900	100% Telekom Crne Gore (51.12% Government, 28.86% Citizens, 20.02 Private Inv. Funds)
	Pro Monte	Private	GSM 900	100% Telenor Mobile Comm., Norway
Kosovo	Val-900	Private	GSM 900	76% PTK Kosovo 23% Monaco Telecom

Early in February 2002 a new mobile service Zapp Mobile [7], based on Code Division Multiple Access (CDMA) 450, was launched in the Romanian market by Telemobil. This system offers voice and data services up to 154kbps, and thus becomes a solution to the low PCs' penetration and the low development of Internet in Romania. The CDMA 450 implementation requires less investment than a GSM operator for a national coverage (US\$600-700 million for 95 percent of the Romanian population coverage). This fact gives to Telemobil the opportunity to offer lower prices than the GSM competitors, even though this company had at the end of the 2003 less than 3% of the Romanian mobile market. From the total number of clients, more than 80% are companies interested in the wideband facilities that this technology offers. CDMA 450 is currently the only technology providing an opportunity to enter the digital era for NMT operators in Eastern Europe. The Telemobil experiment (and similar experiences from SkyLink in St. Petesburg and Eurotel in the Czech Republic) suggests that CDMA could target a niche market not competing directly with GSM, addressed mainly to corporate clients. This technology, that uses a low frequency range, is most likely to be displayed in rural areas. How to handle CDMA and TETRA is a field of investigation for regulators in Eastern Europe.

IV. MOBILE TELEPHONY INDICATORS IN ACC AND WB

The rate of growth of mobile telephony in ACC and WB countries during the last five years is indisputable and, in terms of figures, it reflects an evolution in some countries like Croatia, from 4% to 57%, Bulgaria, from 2% to 39%, and Montenegro, from 2% to 72% [8]. However, the growth of fixed lines in the same countries does not exceed 6% (Figure 2). The fact that these mobile penetration rates are low compared with rates in Western Europe indicates that the market has not been saturated yet. Figure 3 depicts the growth of the mobile penetration from 2002 to 2003, which has

increased more than 20% in almost all the countries. The highest increase, approximately 60%, can be seen in FYROM, due to the launch in the market of a second operator, Cosmofon. As a consequence, the competition between both companies has decreased the prices and has increased the offers to the clients. As far as Kosovo is concerned the mobile market increases very fast. The low growth in Montenegro's market is basically due to the high mobile penetration in this country and to the dramatic growth during the last three years. To be more precise, the mobile penetration in this country has grown 54% and 67% every year since 2000 to 2002, respectively.

The reason for the expansion of mobile telephony in SEE countries should be found in the lower penetration of fixed telephony in rural areas, in the long waiting list and waiting time for a fixed line and the very low quality of fixed telephony services. Moreover, mobile technology permits faster rollout, while the cost for a mobile line seems to be cheaper in comparison with that for a fixed one.

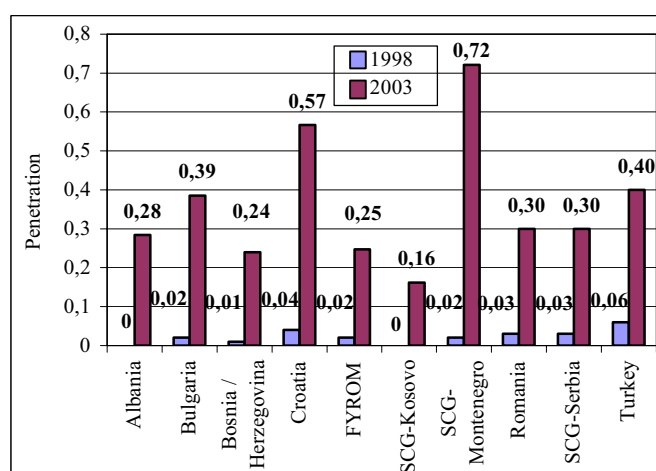


Figure 1. Mobile Communications in ACC and WB countries

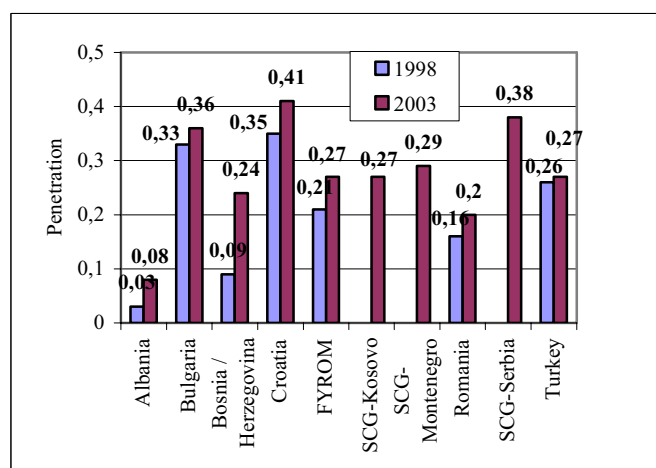


Figure 2. Fixed Communications growth in SEE

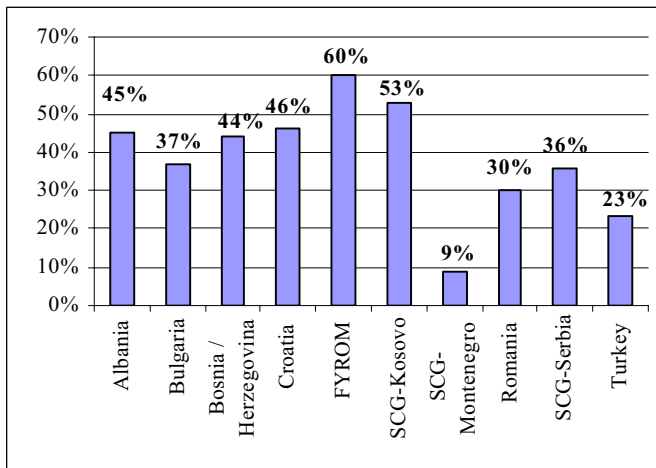


Figure 3. Mobile telephony growth from 2002 to 2003

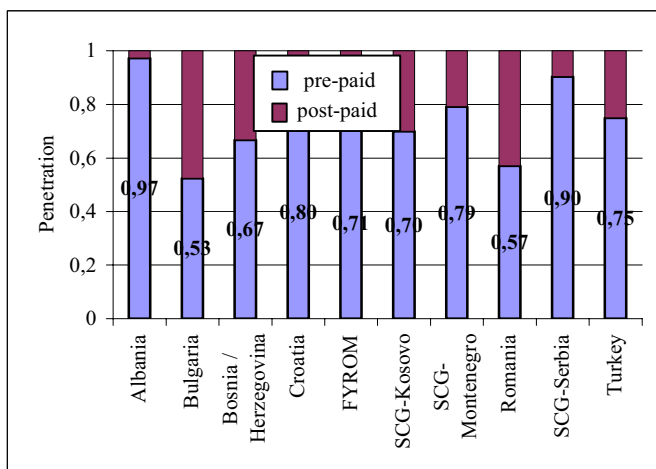


Figure 4. Post-paid and pre-paid penetration in ACC and WB countries

However, a deeper analysis of the mobile market in these countries shows that the increase in the subscriber base is mainly due to prepaid services. All countries tend to have high percentages, more than 53% of pre-paid telephony with respect to post-paid, as it can be seen in Figure 4. That is the case for Albania, Croatia and Serbia/Montenegro, where it corresponds to 97% and 80% and 90% of the mobile users, respectively. The preference of people for pre-paid telephony, in spite of the higher minute price, rises mainly from the better control cost and the high monthly contract fees of post-paid telephony.

V. REGULATORY ENVIRONMENT

The explosion of the mobile sector in these countries can be easily interpreted as a result of the fast steps towards liberalization that the mobile market has made in contrast to the fixed telephony, where the monopolistic situation still characterizes most of the countries marketplaces or wherever it has taken place it is still in an early phase.

Nevertheless the gradual liberalization of these telecom markets should be followed by the establishment of an

adequate regulatory environment. In order this to be achieved, stimulating policies are being implemented, which are expected to foster telecom market. Towards this direction and under the framework of the European telecommunication Directive, the majority of the SEE countries have proceeded to the creation of Independent Regulative Authorities, such as Albania, Turkey, Romania, and Telecommunication Councils, like Croatia. The Bodies role, along with the relevant Ministry of the country, is to implement the best policy practices and support the development of a credible regulatory regime, which will boost investments in the telecommunications sector and promote public confidence in the telecommunication market through transparent regulatory and licensing processes. Serbia and Montenegro is an interesting case, as independent regulators exist in Montenegro (AGENTEL) and Kosovo (Telecommunication Regulatory Authority (ART)) but not in Serbia.

One of the most important aspects that regulation authorities should look in depth, even once the fully liberalization of the market is achieved, is the tariff and pricing policies. In some countries like Albania and FYROM, whose prices for mobile communication are high, regulators have to revise them to make them more competitive. The other major challenges that the Regulators Bodies in the region are currently facing reside in denoting the significant Market Players in the mobile market and reinforcing Universal Service Obligation.

VI. THE ROAD TO 3G AND THE FUTURE

At a European level, the Universal Mobile Telecommunications Systems (UMTS) are continuing their development, although the initial enthusiasm has subsided. This becomes more obvious during the conduct of tenders for licensing operators of third-generation mobile services. The tender prices that telecommunications operators are inclined to pay are much lower than those paid in 2000.

Although no UMTS licenses have been granted so far in Romania, the current trend in the market is to encourage a range of 3G technologies. The Romanian government plans to sell four 3G licenses, for which it intended to organize an international tender. The licenses will be valid until 2019. Each franchise will cost around USD 35 million for the freeing of the frequency spectrum. Spectrum allocated to 3G communications will be in the range of 1900-1980 MHz (currently owned by the Ministry of National Defence) and in the range of 2110-2170 MHz.

In Bulgaria, no UMTS license has been granted so far. The core frequency bands for UMTS (a total of 230MHz) are still occupied, so it is too early to plan releasing the additional frequency bands (another 160MHz). A schedule for a phased release of UMTS frequency bands is currently being prepared. As a first priority, frequency blocks of a minimum of 2710 MHz in the frequency bands 1920-1980 MHz and 2110-2170 MHz should be available by mid-2003. Licenses for 3G operators are expected to be awarded by mid-2005.

Croatian Government is planning to launch UMTS in the mobile market after the award of the third GSM license.

Croatia gave its first UMTS/3G licence to the third GSM operator for a total fee of 30.7 million Euro late in 2004. The rationale was that the third operator would be reluctant to pay for another (3G) license in such a short period, as it might prove financially unfeasible.

Turkish authority does not have a concrete plan for licensing 3G yet, although licences are expected to be granted in 2005-2006. However, a new National UMTS Co-ordination Committee was created in 2002 in order to prepare the Turkish mobile market for the introduction of 3G. For the future the main competition to 3G, but to GSM as well, is expected to come from WiFi & WiMAX technologies. Hybrid solutions of Satellite and IEEE 802.11x including VoIp will challenge the dominance of GSM/UMTS. The battle in ACC and WB will be played under different rules compared to the EU.

VII. CONCLUSIONS

This article has highlighted the mobile communications situation in emerging markets like ACC and WB countries. It can be easily seen from the presented article that the mobile market in these countries has grown dramatically in the past five years. However, the mobile market has not yet been saturated, what means that more investments can be foreseen in the mentioned countries. As far as the future is concerned, the constant upgrade of services that mobile telephony offers allows thinking that its growth in the ACC and WB countries will keep up and the competition for the fixed one will be harder. The introduction of innovative services in mobile phones such as video and internet, which has already started, will bring big changes in the consumer's everyday life.

REFERENCES

- [1] N. Oacă, "Mobile Telephony : The main Driver of Romanian Telecommunications" IEEE Communicaitons Magazine, Vol. 38, No. 8, pp.98-104, August 2000.
- [2] N. Gospic, M. Jankovic, and B. Odadzic, "Yugoslav Telecommunicaitons Markets: Vision and Potential", IEEE Communicaitons Magazine, Vol. 38, No. 8, pp.112-116, August 2000.
- [3] C. Evcı, K. Ciliz, E. Anarım, B. Sankur "Wireless Networks in Turkey: A jewel in the crowd" Alcatel Telecommunications Review, 3rd Quarter 2004.
- [4] Statistical Indicators Benchmarking the Information Society (SIBIS), <http://www.sibis-eu.org/>
- [5] Mentoring of IST Multipliers in the Newly Associated States (NAS) (IST-MENTOR) – Training of IST multipliers and Awareness Nurturing in the 3rd Countries of EAST and South East Europe (NIS) (TRISTAN-EAST-IST), <http://www.tristaneast.net> .
- [6] S.M.Redl, M.K.Weber, M.W.Oliphant, An introduction to GSM, Artech House Publishers, 1995.
- [7] N. Oacă "CDMA450-An alternative to UMTS in Central and Eastern Europe", Global Communications Newsletter, November 2002.
- [8] International Telecommunications Union (ITU) Indicators: www.itu.int