

# Mobile Telecommunications Evolution in Southeastern Europe

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**Abstract**— The last few years the mobile market in South East Europe (SEE) has experienced a rapid growth in terms of operators and penetration rates of mobile telephony. This is due to the fact that wireless telephony has a cost comparable to the fixed and it is easier to be established in comparison with the fixed. Moreover, the countries of SEE hope that through mobile telephony they will be able to decrease the digital gap between them and the European Union countries. An overview on the mobile telecommunications evolution in SEE countries is analyzed in this article.

**Keywords:** *Mobile Communications Indicators, Southeastern Europe*

## I. INTRODUCTION

Over the last few years the South Eastern Europe (SEE) countries (Albania, Bosnia & Herzegovina, Bulgaria, Croatia, Former Yugoslavia Republic of Macedonia (FYROM), Romania, Serbia and Montenegro, Slovenia), have started 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 50 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 are common for most of the countries yet, there are some specific characteristics and particularities for each of them. Some of the countries, as Romania and Bulgaria, have achieved to accelerate both their development and their accession process to the European Union (EU) lacking though the vitality needed for the new global information economy. While others such as Slovenia and Cyprus have fulfilled the criteria for joining the EU and are official members of it. Greece, even though geographically is a SEE country, politically and economically has been on a

different path as a member of European Union.

Although there have been significant progress during the last years in the SEE countries, except Greece, telecommunications infrastructure 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 last few years the mobile communications market in the majority of SEE countries experiences a rapid growth in exception to the other telecommunications infrastructure. This boom is due to the fact that wireless telephony has a cost comparable to the fixed and it is easier to be established in comparison with the fixed. Moreover, the countries of SEE hope 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.

Although work on the telecommunication market in SEE is limited, some authors have tried to analyze the telecommunications market environment in SEE countries. In [1] a survey of the Romanian telecommunications: institutional reform, fixed and 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 [3] a short overview of the Greek mobile telecommunications market and investments of the Hellenic Telecommunications Company in the Balkan countries is analyzed. There is no evidence of articles about the mobile communications market in SEE in order to understand the current and the future market development in cellular and fixed networks in these countries.

The purpose of this work is to present the environment of the mobile communications market in SEE. 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 South Eastern Europe mobile market has drawn the interest of foreign telecommunication companies that have proceeded in important investments.

Currently, forty-one mobile operators are active in the region. 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 SEE countries, the mobile systems and the principal shareholders of each operator. OTE controls the 100% of mobile operators in Bulgaria, FYROM and Romanian, while it is shareholder of the Albanian AMC and Telecom Serbian operators. Vodafone group is also an important player in this region operating in Greece, Albania and Romania, whereas Telecom Italia operates in Serbia/Montenegro, Croatia and Slovenia and Deutsche Telecom operates in Croatia and FYROM (MATAV).

## III. MOBILE SYSEMS

GSM (900MHz and 1800MHz) [5] 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 known they are not analyzed in this paper.

Early in February 2002 a new mobile service Zapp Mobile[4], based on Code Division Multiple Access (CDMA) 450, was launched in the Romanian market by Telemobil. This system provides voice and data services at 154kbps and it has better performance than the GPRS (max 36kbps) giving some type of solution to the low penetration of the PC and the low expansion of the Internet in Romania. The implementation of the CDMA 450 requires less investment than a GSM operator for a national coverage (US\$600-700 million for a 95 percent population coverage). This fact gives to the Telemobil the opportunity to offer lower prices than the GSM competitors. Even though Telemobil has (at the end of the 2002) a small part, less than 2%, of the Romanian mobile market. From the total number of clients, 85% are companies interested mainly for the wideband facilities that the technology offers. However, the CDMA2000 could be an alternative to UMTS in SEE countries for the next generation 3G systems.

## IV. MOBILE TELEPHONY INDICATORS IN SEE

The rate of growth of mobile telephony in the region of SEE during the last five years is indisputable and in terms of figures in some countries like Croatia reflects an evolution from 4% to 47%, in Cyprus from 18% to 60% and in Slovenia from 8% to 84% [6]. In the same countries the growth of fixed lines does not exceed 3%. In particular, as it is shown in Fig.

TABLE I. MOBILE OPERATORS IN SEE

Country	Company Name	Status	System	Partnership
Albania	AMC	Private	GSM 900 and 1800	Cosmote Greece, Telenor ASA Norway, Government
	Vodafone Albania	Private	GSM 900	Vodafone Group, Vodafone Greece
Bosnia and Herzegovina	BH Telecom	Public	GSM 900	Government
	Mobilna Srpske	Public	GSM 900	
	ERONET	Private	GSM 900	HTd.o.o. Zagreb, Hercegovina Osiguranje d.d. Mostar Insurance Company, Alpina Komerc d.o.o.
Bulgaria	Mobikom	Semi-Public	NMT450	Cable and Wireless plc, Bulgarian Telecom, Radio Electronic systems
	Globul	Private	GSM 900 and 1800	Cosmote Greece
	MobiTel AD	Private	GSM 900 and 1800	Eastern Market Telecom, MCG Holding
Croatia	Vipnet	Private	GSM 900	Mobikom Austria, Vecernji List
	HT	Public	NTM 450, GSM 900	Hrvatske Telekomunikacije
Cyprus	CYTA	Public	NMT 900, GSM	Government
fYRoM	Cosmofon	Private	GSM	Cosmote Greece
	MT	Private	GSM	Stonebridge Communications MATAV, Government, International Finance Corporation,
Romania	Mobifon	Private	GSM 900	Vodafone Ltd
	CosmoRom	Private	GSM 1800	RomTelecom-OTE Greece
	Orange Romania	Private	GSM 900	Orange, AIG, Societe General
	Telemobil S.A., Zapp Mobile	Private	NMT 450, CDMA 200	INAQUAM SA, others with less than 0.3%
Serbia and Montenegro	Telecom Serbia	Public	GSM 900	Government of Serbia, Telecom Italy and OTE Greece
	Mobtel Srebjia	Private	GSM 900	BK Trade, Telecom Serbia
	Monet	Public	GSM 900	Government of Montenegro, PTT employees, Private MVP
	Pro Monte	Private	GSM 900	Telenor, other private owners, Government of Montenegro

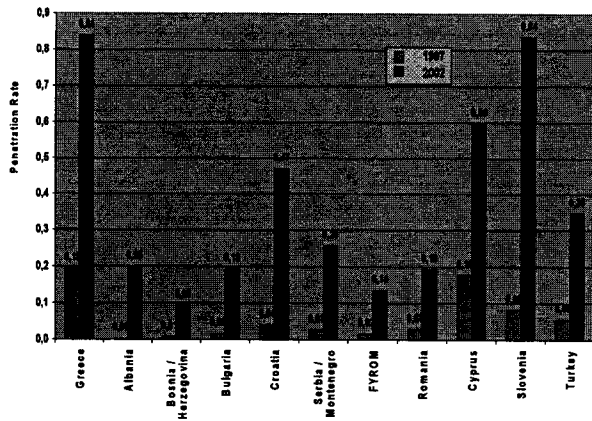


Figure 1 Mobile Communications growth in SEE

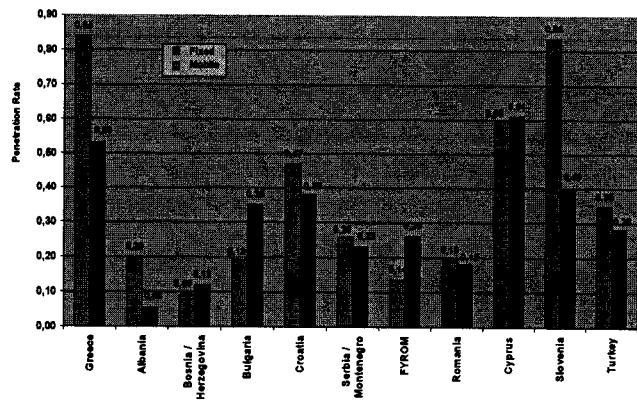


Figure 3 Mobile and Fixed Telephony in SEE in 2002

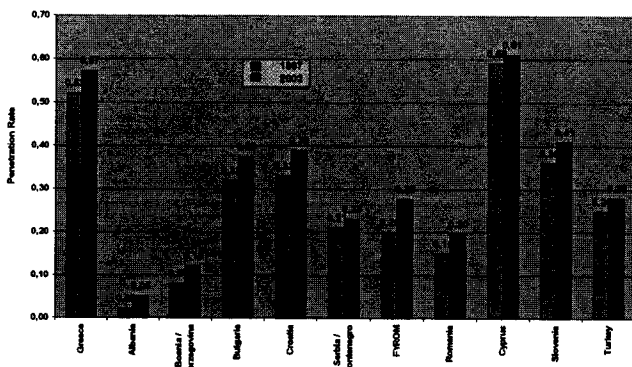


Figure 2 Fixed Communications growth in SEE

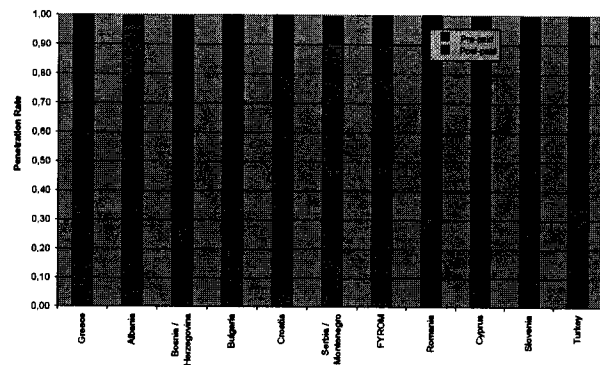


Figure 4 Post pre-paid penetration in SEE

2, the percentage of mobile penetration in certain countries of the region has been developed in such a level that it overpasses that of the fixed telephony. Therefore in Slovenia, a European Union Accession Country, and Croatia the mobile penetration rate in a period of five years has reached more than 80% and 47% when fixed penetration rate does not exceed 41% and 38% respectively.

The rationale for the expansion of mobile telephony in SEE countries should be found in the enough 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.

A deeper analysis of the SEE mobile market shows that some countries tend to have high percentages of pre-paid telephony with respect to post paid as it can be seen in Fig. 4. That is the case for Albania, FYROM and Serbia/Montenegro where it corresponds at 97% and 90% and 91% of the mobile users respectively. The preference of people in pre-paid telephony, even though there is 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 easily be interpreted as a result of fast steps towards liberalization that the mobile market has made in contradiction to the fixed where the monopolistic situation still characterizes most of the countries marketplaces or wherever it has taken place is still in an early phase.

Nevertheless the gradually liberalization of these countries telecom markets should be followed by the establishment of an adequate regulative environment. In order this to be achieved stimulating policies are being implemented which will foster telecom market. Towards this direction and under the framework of the European telecommunication Directive the majority of the SEE countries have proceeded in the creation of Independent Regulative Authorities like 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.

One of the most important aspects that the regulation authorities have to be looked at seriously even the fully liberalization of the market is the tariff and pricing policies. In

some countries like Albania and FYROM whose price for mobile communication is high, the regulators have to revise them to make it more competitive.

Although the liberalization of mobile market has taken place in the SEE countries, except Cyprus, the state continues to play an important role. However, this phenomenon is not a surprise given the fact that this market constitutes a great source of income for every government.

In Cyprus the government has recently decided to give another GSM license. The new license holder will be obliged to provide 50% population coverage in two years and 75% after four years. The new entrant and the incumbent Cyprus Telecommunications Authority (CYTA) will also be offered a free 3G license if they commit to a launch within 10 years. The new license will be valid for 20 years and this condition of the two operators will exist for five years, or until the new entrant achieves a 25% market share, whichever comes sooner.

The last years a number of actions have been developed in European and international level in order to promote regulatory and other issues in the SEE such as the Investment Compact, the Stability Pact, and the eSEE Europe initiative. Their aim is to create a favorable and stable economic climate for domestic and foreign investors and private sector development, with full protection of rights, not only by the letter of the law but also by administrative implementation and judicial enforcement. However, the regulatory framework in the SEE countries needs efforts for further integration and alignment with the European framework should continue. The exchange of experience between European independent regulators Agencies and the regulative authorities of the developing SEE countries can be proved extremely positive and beneficial for them.

#### VI. THE ROAD TO 3G AND THE FUTURE

At a European level, the Universal Mobile Telecommunications Systems (UMTS) are continuing their development, but the initial enthusiasm has subsided. This is most obvious during the conduct of tenders for licensing operators of third-generation mobile services. The tender prices that the telecommunications operators are inclined to pay are much less 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 manages to sell four 3G licenses, for which it intended to organize an international tender. The licenses will be valid for 15 years. Each license winner will pay a total of \$35 million for the freeing of the frequency spectrum. Spectrum allotted 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 2x10 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-2004.

Croatian Government is planning to launch UMTS in the mobile market after the award of the third GSM license. One of the options being considered is to charge the two current operators for the UMTS license, allowing the third GSM operator to roll out the UMTS without any licensing costs. The rationale is that the third operator would be reluctant to pay for another license in such a short period, as it might prove financially unfeasible.

#### VII. CONCLUSIONS

As far as the future is concerned the constant upgrade of services that mobile telephony offers allow to think that its growth in the SEE countries will keep up and the competition with the fixed one will be harder. The introduction, that has already started, of innovative services in mobile phones such as video and internet will bring big changes in consumer's everyday life. This effect will probably turn their interest into that. However, this doesn't mean that fixed networks will not continue to play an important role in people's lives at least for the near future.

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