



Broadband Infrastructure Competition

Monitoring electronic communications and
information society services in Enlargement
Countries - Forum 3

Montenegro, February 5, 2010

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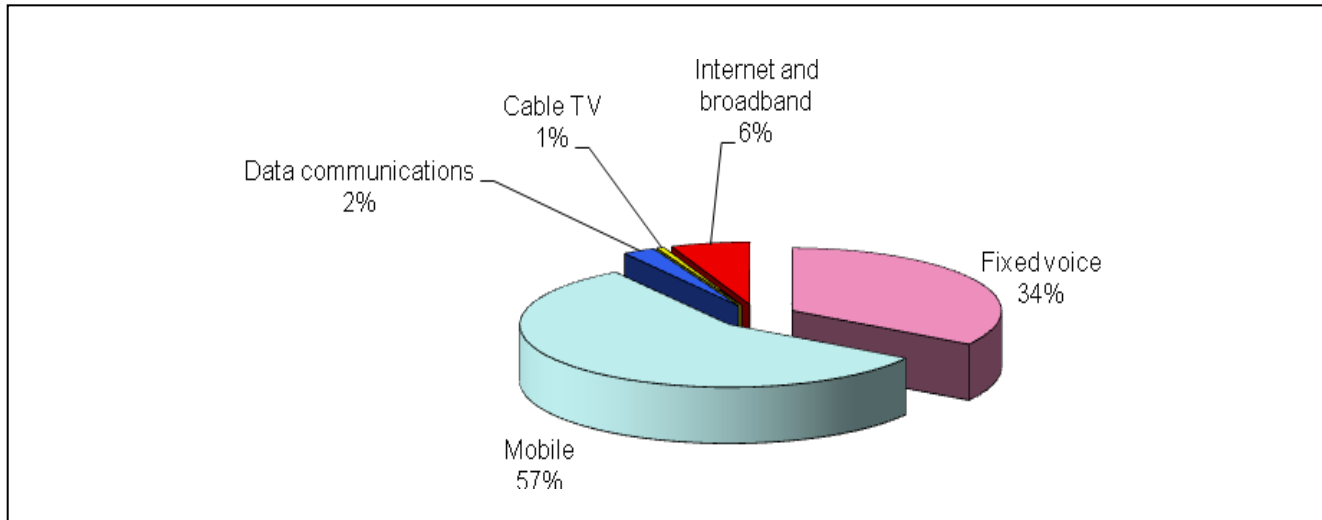
Agenda

Broadband penetration – regional market overview

Towards a Connected World - Socio-economic impact of Internet in Emerging Economies, Boston Consulting Group study



Electronic communications market overview enlargement countries



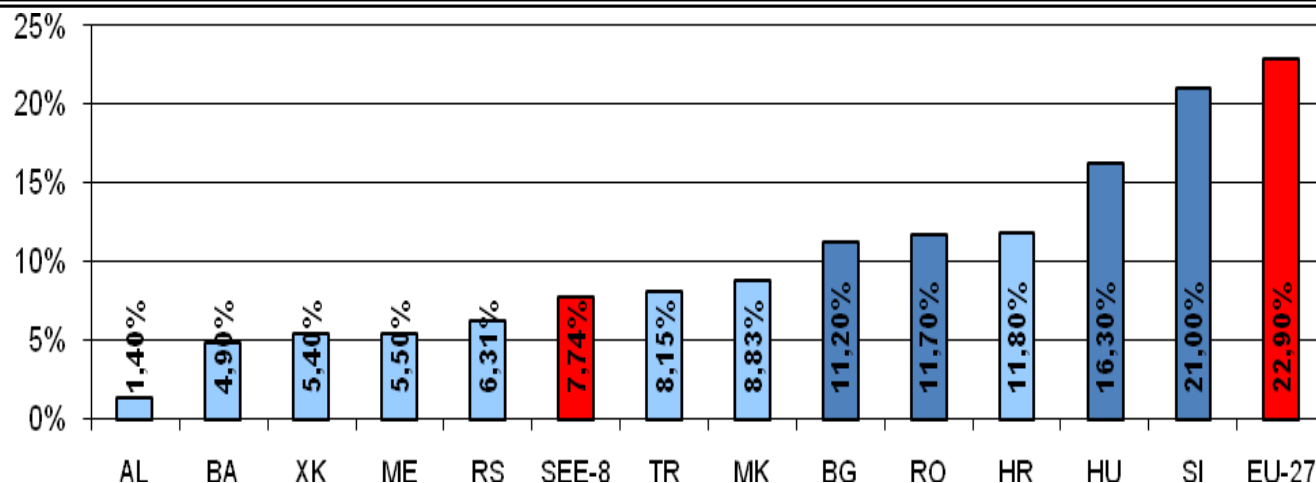
Electronic communications market in 2007, by sector¹

- Internet services amounted to only 6% of the region's electronic communications market value.
- Internet services, the fastest growing sector, with 40.3% annual growth

**Strong potential for further growth of Internet and
Broadband market**



Broadband penetration overview



Broadband penetration rate, January 2009²

- Broadband penetration rate significantly below the EU-27 average rate
- The average broadband penetration rate for the eight countries 7.74%, one third of EU-27 average

Broadband penetration target in Strategy for broadband access development in Republic of Serbia is 20% until 2012³

Source: ² Enlargement Countries Monitoring Report II, Cullen International, June 1, 2009 (Broadband penetration rate, measured as the overall number of broadband lines divided by the national population).

³ According to the Strategy for broadband access development in Republic of Serbia fixed broadband is 4 Mbps and mobile is 512 kbps.

Strategy & Action Plan for broadband access development in Republic of Serbia

Activities related to telco infrastructure development envisaged by Action Plan:

- Telecommunications ducts register – Q4 2009
- Action Plan for efficient telecommunications infrastructure use – Q4 2009
- Rules of Procedures on local loop unbundling – Q4 2009
- Radio Frequency Band Allocation Plan – Q4 2009
- Harmonisation of the Law on Planning and Construction with needs of telecommunications infrastructure development - Q3 2009

Broadband access availability:

Montenegro:

- xDSL: T-Com owner of telco infrastructure
 - started relatively late, but in expansion
- Wireless:
 - non licensed frequency range at 2.4 and 5 GHz
 - licensed: GSM, DCS, UMTS, WiMAX (3.4-3.8 GHz)

Serbia:

- xDSL: Telekom Srbija owner of telco infrastructure
- Cable
- Wireless:
 - non licensed frequency range 2,4 GHz and 5,5 GHz
 - licensed: GSM, DCS, UMTS (3G), WiMax (3,5 GHz) and CDMA



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Executive summary – extract (1)

Although Internet growth has been fast, its potential is still not being maximized

- Limited access to fixed line infrastructure can be a barrier to further growth
 - Internet growth can be accelerated with wireless broadband (BB) roll-out, particularly in rural regions
 - Wireless BB can complement fixed BB, triggering a further boost of business productivity

It is projected that in 2020, there will be 42 Internet subscriptions per 100 people in Serbia

This increased Internet penetration can increase GDP growth, generate jobs and taxes. By 2020,

- Contribution to GDP could reach 5.2%
- Productivity uplift of 2.8% and 5.6% possible in manufacturing and services firms
 - Contributing up to 1.1% and 3.5% to GDP respectively
- In agriculture, the benefit could be worth up to RSD 10.5 B (in 2009 constant RSD)



Executive summary – extract (2)

- 17 000 new businesses could be created
- ~93 000 new jobs could be generated
- Government revenues could be boosted by ~RSD 54B

Furthermore, this increased Internet penetration can help address priority social concerns if properly harnessed

Key roles for NRA and the government in maximizing the potential benefits of the Internet

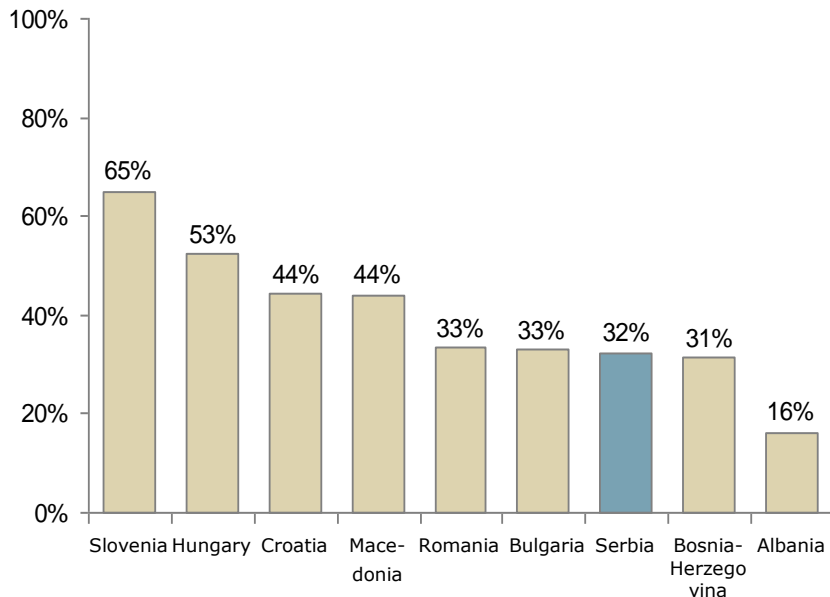
- Improve clarity and streamline procedures to facilitate market entry and increase investment
- Enhanced access to infrastructure for ISPs, particularly backbone and local loop at cost-oriented terms and spectrum
- Maximizing benefit from spectrum, including the digital dividend



Serbia in line with peers for proportion of Internet users, but still behind European average

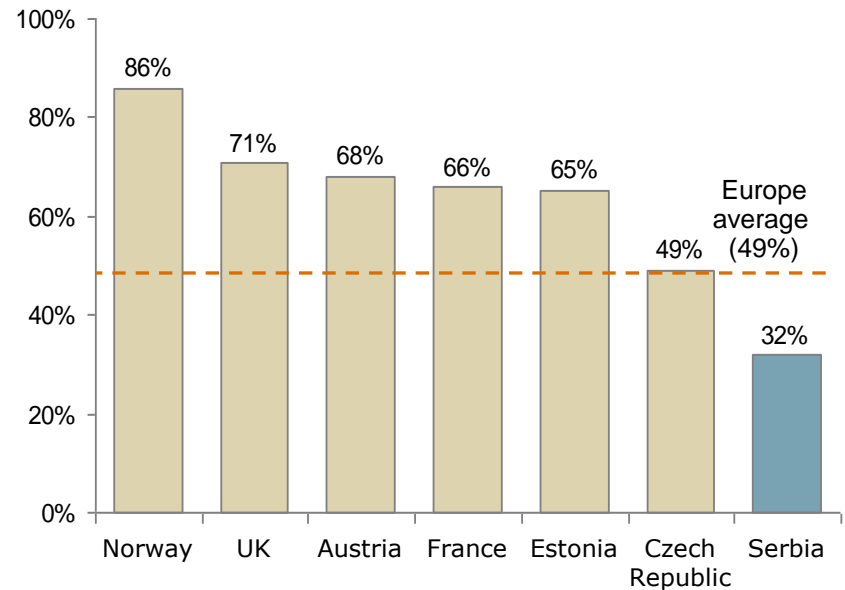
Internet user penetration only slightly below peers in the region ...

Internet users⁴ as % of total population 2008



... but still well below European rates

Internet users⁴ as % of total population 2008



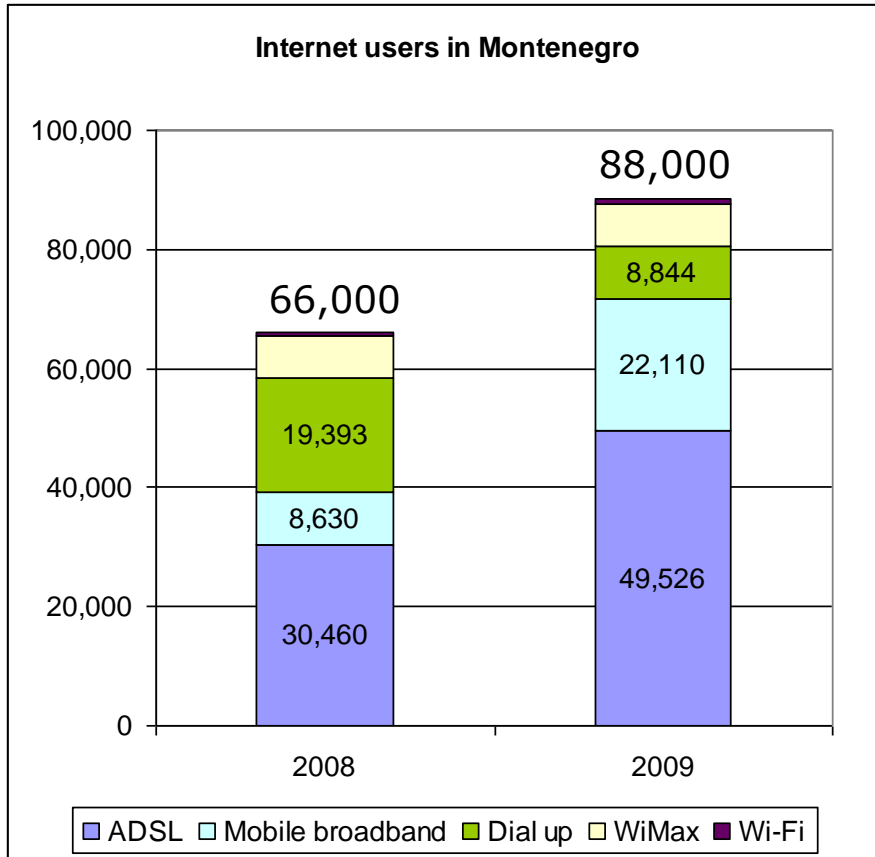
Source: ⁴Ratio defined as percentage of the total population of a given country that uses the Internet. This number is higher than the Internet subscriber rate, as more than one person may use a connection, and some users do not have connections (e.g., access through Internet cafe)

Source: InternetWorldStats



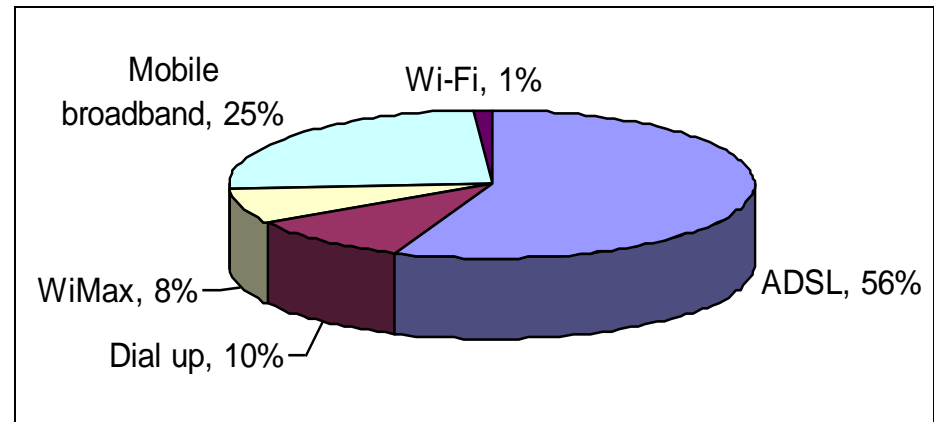
Overview of Internet market in Montenegro

The main growth generators are new ADSL and mobile broadband subscriptions



Sources: Regulatory Agency Annual report for 2008
Magyar Telecom report for Q3 2009;
M Tel press releases

• Share of Technologies:



2009

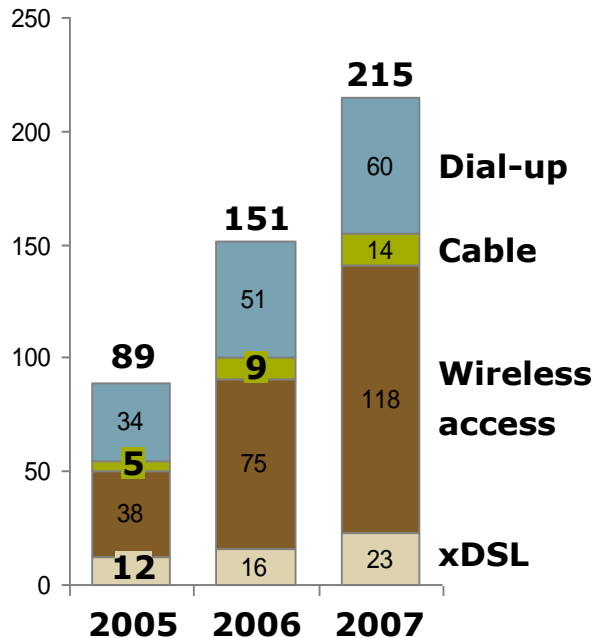
Serbia is already witnessing an Internet boom, and...

Growing number of Internet providers...

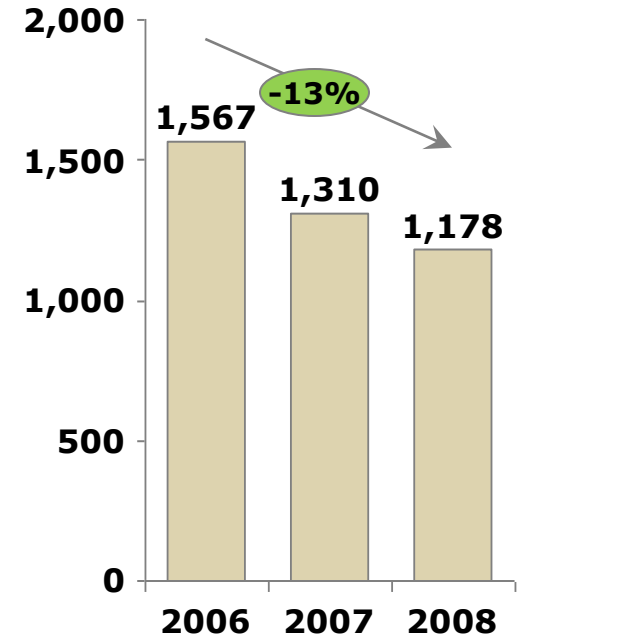
...has increased competition for customers...

...and driven down prices

of ISPs by access technology



Average ADSL price (RSD/month)



...but limited access to fixed line infrastructure can be a barrier to growth

Fixed line penetration growth is limited

Lack of fixed line infrastructure in rural Serbia

- Long waiting list of customers who want to have a fixed line
- Many HH sharing lines, so that only one can use the phone at the same time

High cost of roll-out

- Creating greenfield cable infrastructure is not cost-efficient
- Revenues from users cannot cover investment costs

Lack of competition

- Incumbent maintains monopoly in fixed line business
- Tender in Serbia for second fixed line operator in late-2009/2010

Wireless technology can be a cheap alternative to providing fixed lines

Roll-out of wireless or fixed-wireless networks can be a faster alternative to fixed lines

- Much faster rollout with less physical works
- Number of users not limited by cable infrastructure
- Possibility to use parts of existing mobile infrastructure (e.g. poles)

In rural areas, wireless is the most cost-efficient solution

- No need for expensive ground works
- Lower upfront investment requirements

Mobile phone market already competitive compared to fixed line business

- Three mobile players on these markets
- Competition creates pressure on prices and benefits the end-consumer



Focus on three priority regulatory issues could help accelerate Internet development in Serbia

Enhance rules and procedures

Improve clarity and streamline procedures to facilitate market entry and increase investment

- Perception that there is a lack of clear rules
- Bureaucratic procedures can stall development
 - E.g., process for obtaining construction permits and certificates

Enhance enforcement of laws

- Ensure rules are made effective

Provide equal access to backbone

Improved access to infrastructure required to stimulate investment and improve quality of service and coverage

- Unbundling of local loop to allow access to incumbent's infrastructure (e.g., dark fibre, sewage shafts and ducts) at non-discriminatory, cost-oriented terms
- Access to alternative access and transmission infrastructure at commercially fair prices (e.g. based on regional benchmarks or EU pricing)

Manage spectrum efficiently

Maximize benefits of spectrum

- Technology-neutral licensing arrangements will enable operators to optimize
 - e.g., choose between UMTS and GSM operations at a particular frequency
- Switchover to digital broadcasting ("digital dividend") creates opportunity to allocate spectrum to mobile broadband
 - Highly suited to be deployed in rural areas

Basic regulatory framework in place, removing final obstacles should attract investment into Internet provision





Questions?

Thank you for your attention!

