

EUROPE & CIS'S TELECOMMUNICATION/ICT MARKETS AND TRENDS

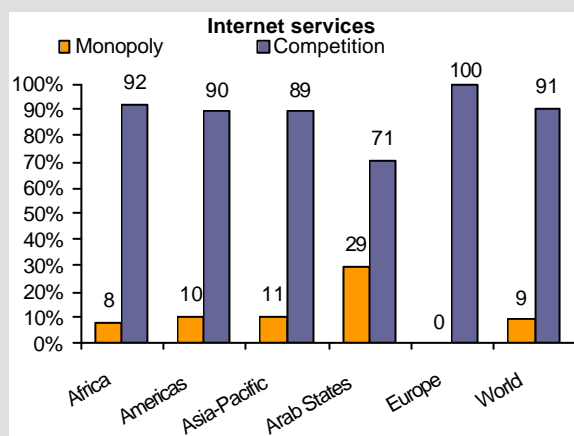
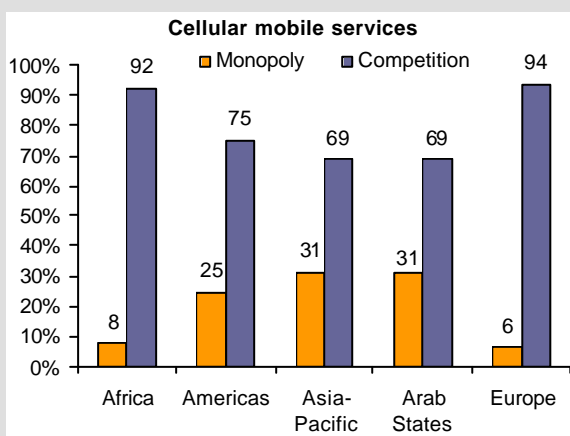
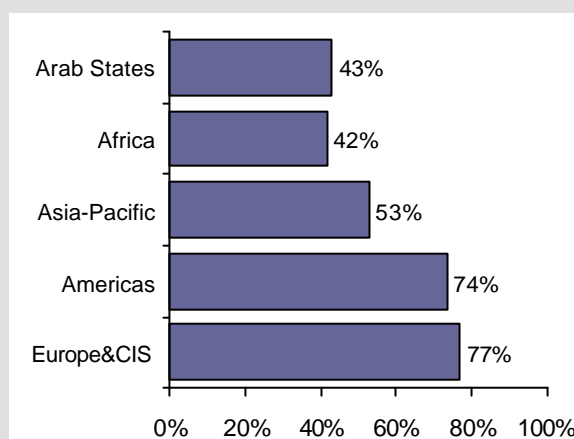
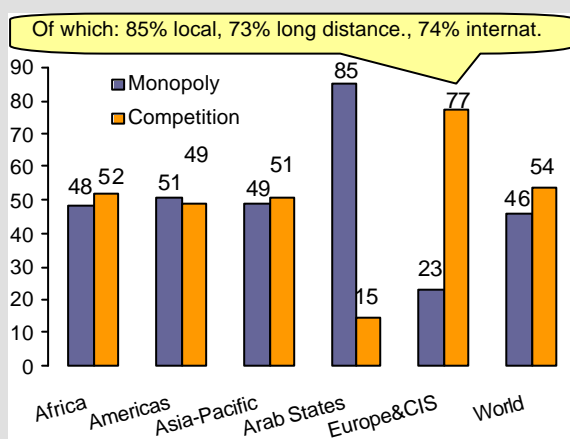
1. Liberalized, private & competitive

Europe & CIS has developed into the region with the highest degree of liberalization, privatization and competition in its telecommunication sector. While by 2004 the majority of countries (54 percent of countries worldwide) had opened up their basic telecom service markets to competition, Europe & CIS took the lead. Competition to the European incumbents is the norm and some 85 percent of local markets, 73 percent of long distance markets and 74 percent of international markets are open to other operators¹ (Figure 1, top left). At the same time Europe & CIS leads in terms of privatization and has the highest percentage of partly or fully private incumbents (Figure 1, top right).

Europe & CIS also leads in the generally more liberalized telecommunication markets. By 2004, ninety-four percent of the region's cellular mobile services had been opened to competition, compared to 92 percent in Africa, 75 percent in the Americas, and 69 percent in Asia-Pacific and the Arab States (Figure 1, bottom left). Europe & CIS remains the only region in the world with a one hundred percent competitive ISP market (Figure 1, bottom right).

Figure 1: Europe takes the lead: liberalization, privatization & competition

Level of competition for basic services, by global region, 2004 (top left) and percentage of countries with partly or fully private incumbents, by global region, 2004 (top right). Level of competition in cellular mobile services, 2004 (bottom left) and Internet services, 2003 (bottom right).



Source: ITU World Telecommunication Regulatory Database. Note: Europe refers to Europe & CIS.

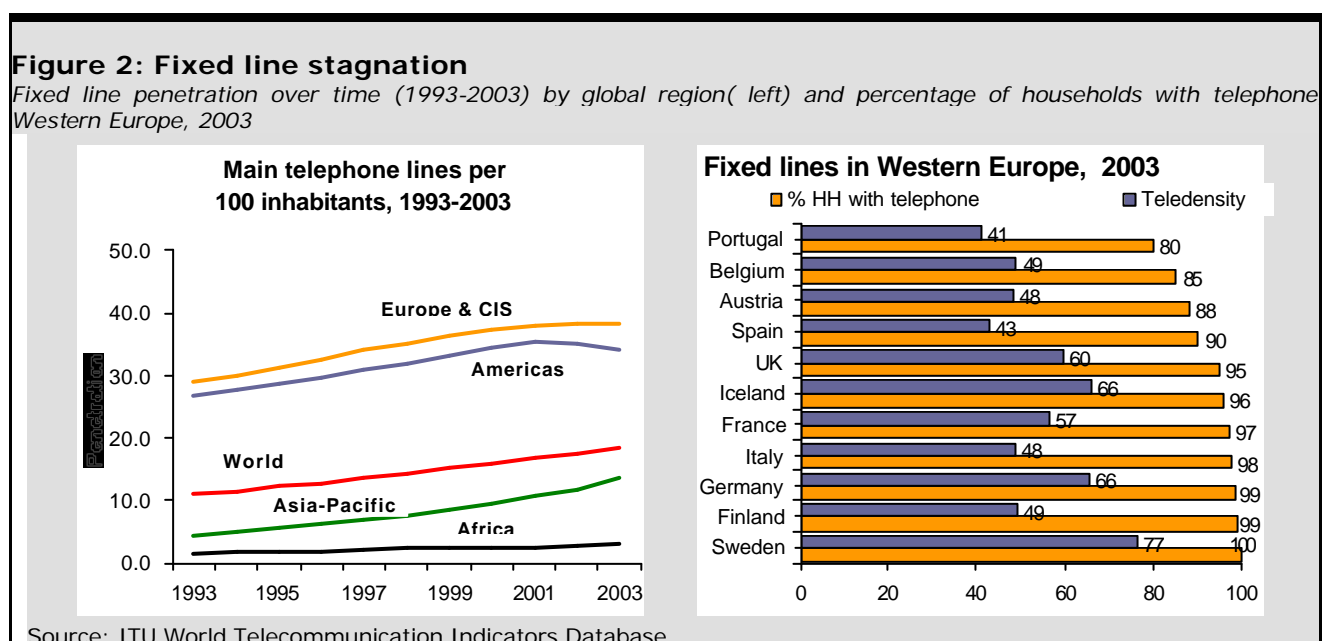
¹ ITU. Trends in Telecommunication Reform 2004/2005.

2. Fixed line stagnation...

The total number of main telephone lines in Europe & CIS has shown a minimal growth rate - below one percent - for several years and the number of main lines reached its peak in the Baltic States and Western Europe in 2001, when it stood at 223 million (Figure 2, left). Between 2001 and 2003 a total of 22 states (42 percent of all those in Europe & CIS) registered a negative growth rate in fixed lines and only eight countries had growth rates of more than four percent. Despite these developments the region remains the global leader in terms of fixed line penetration.

In a number of countries stagnation in the fixed line market is partly due to saturation. In Western Europe, overall fixed line penetration rate stands at 56 percent, with most households owning a telephone line (Figure 2, right).

An important issue, and a potential threat to fixed line operators, is the fixed to mobile substitution (FMS), that is, the use of mobile phones instead of fixed phones for calls or access. FMS may take different forms, and is not always clearly measurable (unless through household surveys), and interpretations and predictions about its scale and impact vary. Although the relatively stable number of fixed lines in Western Europe suggests that few users are actually 'cutting the cord', a recent EU commissioned survey suggests that some new European users are going 'straight to mobile'. According to the 2003/04 survey "an increasing number of households have one or more mobile phones without owning any fixed line: while the average of households without any fixed line is 15%, this proportion reaches 33% in Finland and Portugal"². FMS seems to be an even greater issue in the lower-income regions of Europe & CIS and fixed line growth rates remain low even in countries where penetration levels have not reached saturation. The Commonwealth of Independent States (CIS), which at a modest 3.8 percent in 2003, showed the highest fixed line growth rate, had only 21 fixed lines per 100 inhabitants. Much higher growth rates in the mobile market, 89 percent in CIS in 2003, suggest that many users choose to have access to a mobile phone only. In the Baltic States mobile overtook fixed in the year 2002. Since then fixed line penetration has stood at some 30 percent and actually decreased by almost eight percent in 2003. Mobile growth rates, in contrast, remained strong at some 30 percent in 2003, with penetration exceeding 62 percent.



² The survey, which was carried out for the European Commission, was based on a sample of 44'219 respondents in 127 regions, being representative of the total population of the 15 pre-accession EU Member States by demographics and regions. The interviews were carried out between the end of 2003 and the beginning of 2004. See http://europa.eu.int/information_society/newsroom/cf/itemlongdetail.cfm?item_id=1347.

One of the main reasons why the mobile phone has challenged the fixed line has been the dramatic drop in prices, triggered by major competition in the mobile sector. In some countries, such as Denmark and Finland, the gap between fixed and mobile prices has considerably shrunk.³ With the decreasing difference in prices, fixed line operators are losing traffic and revenues to the mobile sector. The trend highlighted by the majority of 2004 financial reports in the telecommunication industry showed: lower fixed network voice telephony revenues versus higher mobile and broadband revenues. Germany's Deutsche Telekom AG - Europe's largest telecom operator - reported a 4.4 percent drop in its fixed line unit, T-Com. This loss, brought on by stronger competition and price pressures, was offset only by strong growth in the broadband (DSL) market.⁴ In France, the fixed line telephony market has dropped continuously since 1998, with a 4.1 percent fall in value and 4.2 percent drop in volume (minutes) in 2003. But, according to ART, the French regulator, "*growth of around 12 percent in value in the mobile telephony and Internet business easily offset the structural decline in the fixed line market*".⁵

Similar trends can be observed in other parts of Europe. In Central and Eastern Europe, revenues from fixed line services are generally decreasing and contrasted by growth in the mobile and broadband market. In 2004 Cesky Telecom, the Czech incumbent, posted a 12 percent increase in revenues from data, internet and value-added services while fixed line voice revenues dropped by 25 percent⁶. In Slovakia, the incumbent registered an overall decrease of revenues of 5.2 percent in the first nine months of 2004 due to declining fixed line revenues.⁷

Operators are not only facing competition from the mobile sector, alone. For the first time in several years, the EU in 2004 recorded an increasing number of new market entrants. Competition increased particularly in the new member states, where fixed line penetration lies below the EU15 average, suggesting that operators see a business case and margins for lower prices. (Figure 3, left). Overall these developments have led to a decline in incumbents' market share (Figure 3, right), a higher degree of competition, and lower prices. In Poland, for example, incumbent Telekomunikacja Polska (TPSA) has lost one-fifth of its local and international long-distance fixed line market since the introduction of competition and lower prices offered by new operators. TPSA has reacted by cutting its own prices.⁸

These developments have generally taken place to the benefit of consumers who have seen fixed line prices drop and customer choice and services increase. These include tailored pricing packages and a growing number of countries that offer fixed line portability.

³ Northstream. Growing the mobile voice market. November 2004.

⁴ Deutsche Telekom. <http://www.telecomdirectnews.com/do.php/120/12093>

⁵ Autorité de Régulation des Télécommunications (ART). Annual Report 2003. Available at www.art-telecom.fr

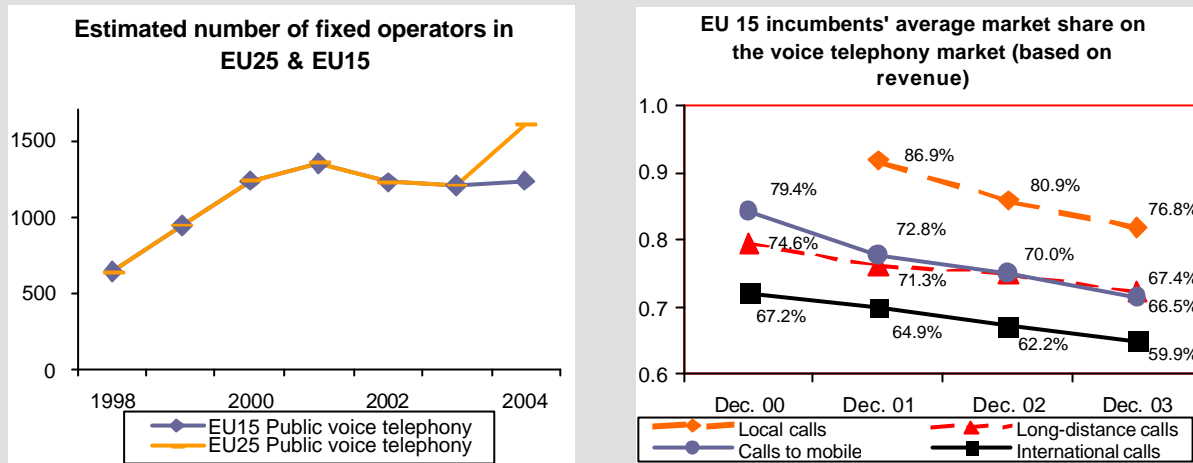
⁶ Cesky Telecom. 2004 Audited Financial Results. 21.03.2005. See: http://www.telecom.cz/infocentrum_e/tiskove_centrum/tiskove_zpravy/clanek.php?tz=21032005_1

⁷ Wood. Monthly Economic Review. Slovakia. November 2004. See: http://www.wood.cz/report_files/Monthly%20Political%20and%20Economic%20Review%20-Oct04.pdf

⁸ Global News Analysis. Poland: Competition cuts call costs. 08 July 2004. See: http://www.ebusinessforum.com/index.asp?doc_id=7074&layout=rich_story

Figure 3: Competition from within

Estimated number of fixed operators in EU25 & EU15, 1998-2004 (left) and EU 15 incumbents' average market share on the voice telephony market, based on revenues, 2000-2003 (right)



Source: European Commission.

With fixed line operators currently struggling for market shares and revenues, future developments in the sector will depend on a number of factors, including the development of new technologies, such as converged fixed-mobile products⁹ or other bundled services, such as TV over ADSL¹⁰. Particularly in the near future, it will also depend on the ability of mobile networks to provide high-speed Internet access. Until users can easily, and at comparable price and quality, access the Internet over their mobile phone, users will not relinquish their fixed line. This is particularly true in a region where around 90 percent of broadband is delivered over xDSL technology. However, even where the need for fixed lines to support Internet access will limit the decline in fixed lines in the short term, this will not prevent an aggressive battle for voice minutes between fixed and mobile operators.

⁹ An example for a converged fixed-mobile product is BT's Bluephone, a single phone that will combine fixed and mobile networks. For more information, see: <http://www.btplc.com/Innovation/Mobility/everywhere/>

¹⁰ TV over ADSL represents another incentive for customers to keep (or install) a fixed telephone line. This service, provided, for example, in France, bundles video, broadband Internet, and voice services. See World Market Research Centre. March 30, 2005. France: Operators Line Up for TV over ADSL in France

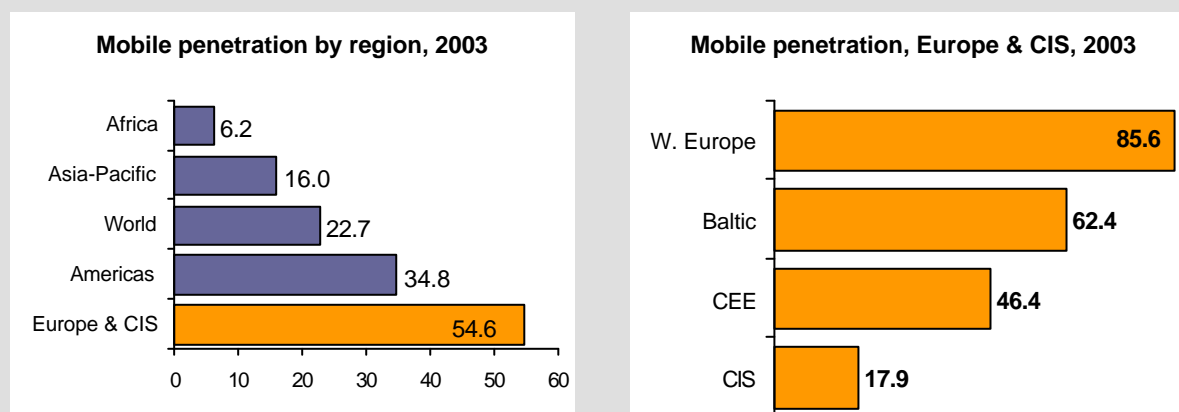
3. ...versus continued mobile growth

Europe & CIS leads the world in terms of mobile penetration rates. At the end of 2003 the most liberalized mobile market had just over 475 million mobile subscribers and a penetration rate of 54.6 percent. This compares to 6.2 percent in Africa, 34.8 percent in Americas, and 16 percent in Asia-Pacific (Figure 4, top left). By the end of 2003 more than three quarters of the countries in the region had more mobiles than fixed lines and Italy and Luxembourg were the first to surpass the theoretical saturation point of 100 percent (Table 3). Since then other countries, including Finland and the Czech Republic, have followed. Even countries with mature penetration levels continue to show growth, indicating that saturation levels in the mobile market might be difficult to estimate for a number of reasons (Box 1).

The main digital (as well as economic) divide in Europe & CIS is between Europe's Baltic States, CEE, and Western Europe on the one hand *and* CIS on the other hand. In 2003 almost half of the CIS countries - Armenia, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan - had penetration levels under five percent. The CIS average remains at a very low 17.1 percent (Figure 4, top right) and in only two CIS countries – Azerbaijan and Georgia - mobile had slightly overtaken fixed line penetration. At the same time the region with the lowest mobile subscribers per 100 population has by far the highest growth rates, an average of 99.4 percent. Tajikistan leads at 441 percent growth rate between 2001 and 2003. It is also noteworthy that a number of CEE countries have mobile penetration levels close to or even higher than those of Western Europe. In 2003 the Czech Republic stood out with 96.5 percent, followed by Slovenia (87.1 percent) and Hungary (76.9 percent). Poland and Turkey (the two largest CEE countries in terms of populations) are still lagging behind, with mobile penetration rates of 45.1 and 39.4 percent, respectively. Together the two countries represent an untapped market of around 60 million potential users.

Figure 4: Europe leads in mobile penetration

Mobile penetration rates, by regions, 2003 (left) and mobile penetration rates within Europe & CIS, 2003 (right)



Source: ITU World Telecommunication Indicators Database.

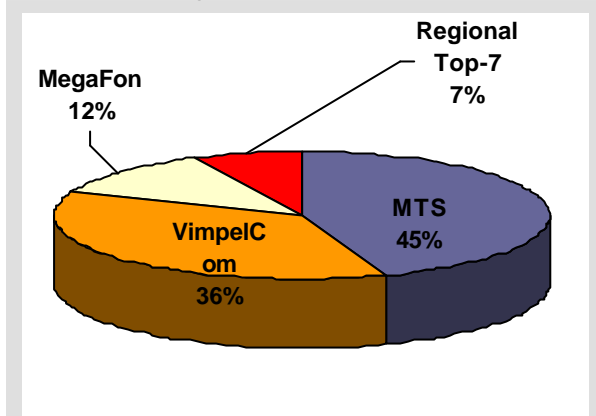
Another example for continued market opportunities is Russia. Europe's market with the most potential in terms of population more than doubled the number of mobile subscribers in 2004, from 36.5 million to 74.4 million.¹¹ The country's poor fixed line network and lack of infrastructure investment has opened up opportunities for three large operators (representing close to 90 percent of the market) and 60 small operators (Figure 5). High growth in 2004 has allowed Russia to overtake Germany, France, Spain and the UK and to become the largest mobile market in Europe

¹¹ Jason & Partners Management Consultancy. Russian Cellular Market Watch. December 2004.

& CIS. However, the country's overall mobile penetration rate of close to 52 percent conceals a major national digital divide, with the majority of subscribers concentrated in urban centers.

Figure 5: New markets in Russia: 8.3 million new mobile subscribers in one month

Operators' market share of 8.3 million new mobile subscribers during December 2004



Source: Jason & Partners Consultancy.

Increased competition in the mobile market has drastically decreased the price for mobile services and the difference between fixed and mobile prices has narrowed dramatically over the last decade. In Germany a price index comparison for fixed and mobile telecommunication services shows that over the last decade the country's fixed line prices have decreased by 23 percentage points, compared to 57 percent for mobile services.¹² While the cost for mobile calls remains higher than those made on the fixed line network¹³ a longer and often more intense price war in the mobile sectors across Europe & CIS markets has narrowed the price gap.

Despite already high penetration levels and lower prices, mobile operators across Europe & CIS continue to benefit from major profits and together with the broadband sector, the mobile market was 2003/04's biggest subscriber growth and revenue

engine. In 2004 the European Union reported an average of seven percent growth for its member states and revenues from mobile services exceeding those of fixed voice services¹⁴. Most operators highlight that increasing subscriber numbers and growing average volumes per user have helped to sustain growth rates. In 2003 the French mobile sector grew by no less than 12.6 percent in value, triggered largely by a growing call volume (up 21.2 percent in 2003)¹⁵. In the UK, households increased their average mobile calls from 10 minutes in per household in 1999 to 27 minutes in 2003. And for the first time the average household expenditure on mobile services in the UK exceeded those on fixed voice services.¹⁶ In Russia **MTS**, the country's largest mobile operator, added another 7.4 million customers to its subscribers base during the first nine months of 2004..¹⁷

While many mobile operators have focused increasingly on non-voice services to enhance their revenue, voice services still account for the lion's part of revenues in most European & CIS markets. In the Dutch market, data revenues represented between 12 and 16 percent of operators' total mobile service revenues.¹⁸ In Poland, TP Group, Poland's leading telecoms provider, reported SMS revenues increase by 32 percent over the year but still only amounted to 14.5 percent of blended ARPU in the fourth quarter of 2004.¹⁹

¹² Statistisches Bundesamt Deutschland. See <http://www.destatis.de/indicators/d/tpi001jd.htm>.

¹³ It should be noted that it is difficult to directly compare fixed and mobile prices, given varying pricing packages, the bundling of services, and the provision of different services, such as SMS.

¹⁴ Commission of the European Communities. Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions. European Electronic Communications Regulation and Markets 2004.

¹⁵ Autorité de Régulation des Télécommunications (ART). Annual Report 2003. Available at www.art-telecom.fr

¹⁶ OFCOM. The Communications Market 2004 – Telecommunications. Available at: <http://www.ofcom.org.uk/research/cm/cmpdf/telecoms.pdf>

¹⁷ Mobile TeleSystems (MTS). Q3 2004. Financial and Operating Results. Management Presentation. November 2004. Available at: <http://www.company.mtsgsm.com/>

¹⁸ World Market Research Centre. March 24, 2005. Europe Regional: Day of Reckoning for Mobile Data

¹⁹ TP Group. Full Year Results 2004. Available at: http://www.tp-ir.pl/files/en/TPGroup_FY04results_20050210_ver2.pdf

Within the data market, SMS continues to dominate, despite high expectations for MMS uptake, which, so far, have not materialized. While in 2004 the French SFR subscribers sent six times more MMS than in 2003 – 35 million in total – this still only amounted to less than ten percent of the number of SMS sent by the French operator's customers.²⁰ The overall level of MMS use and related revenues in Europe remain small and while the number of SMS has increased dramatically of the last few years, MMS is still in its infancy.

Box 1: Mobile penetration beyond 100%?

By the end of 2003 mobile penetration in Italy and Luxembourg had passed 100 per cent, meaning that there were more mobile phones than people. Since then other countries in Europe have followed, including Finland, Sweden and the Czech Republic. The theoretical saturation point ought to be around 85 – 90 per cent, assuming that some children are too young to have a mobile phone, and some people would not choose to own one. Even allowing for extraneous factors, like tourism or migrant workers, there should be some sort of limit. Nevertheless, mobile phone ownership, even in the most advanced economies, continues to grow. Despite already high penetration levels of above 90 per cent in 2003, Sweden and Spain continued to have two digit growth rates (10. percent and 11.2 percent, respectively) in 2003.

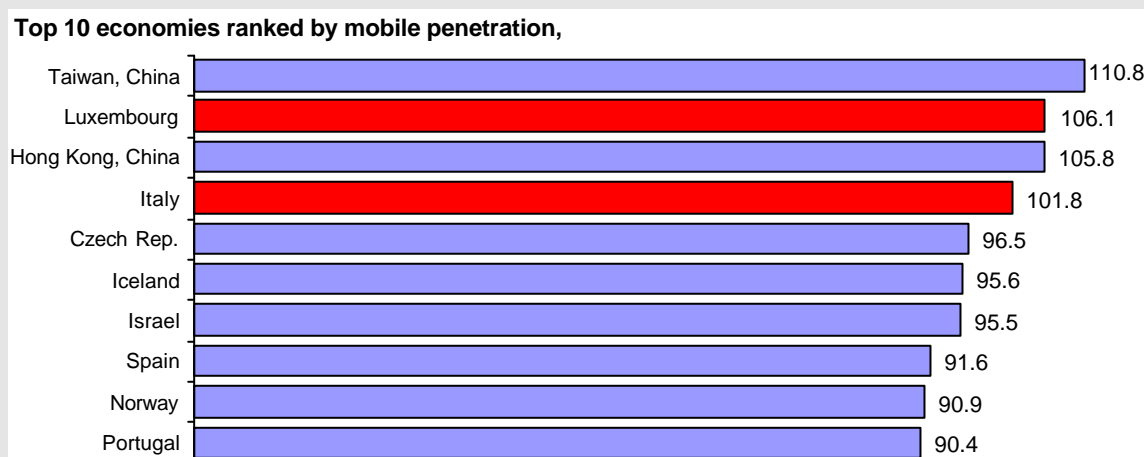
There are several factors at play in countries with 100 plus mobile penetration rates, causing mobiles to surpass the supposed saturation point:

- An individual user may own more than one mobile phone (e.g., one for home use and another for business);
- An individual user may have more than one mobile service account, especially where prepaid is popular.
- Mobile phone service providers may have different policies on when a prepaid account is no longer considered active. Thus, there may be some double counting of subscribers. Czech mobile operators, for example, include those SIM cards from which no calls have been made for up to one year.

In the longer term, though, the *saturation* rate may prove to be illusory. Families in the future may own several devices with mobile communicating ability built in. We are entering an era of pervasive computing and communications in which the majority of calls will be made from one machine to another. Mobile communicating devices will be used in a wide variety of fields, from healthcare, to personal security, to lifestyle convenience.

Box Figure 1: More mobiles than people

Top 10 economies ranked by mobile subscribers per 100 inhabitants, end 2003, world



Source: ITU World Telecommunication Indicator Database

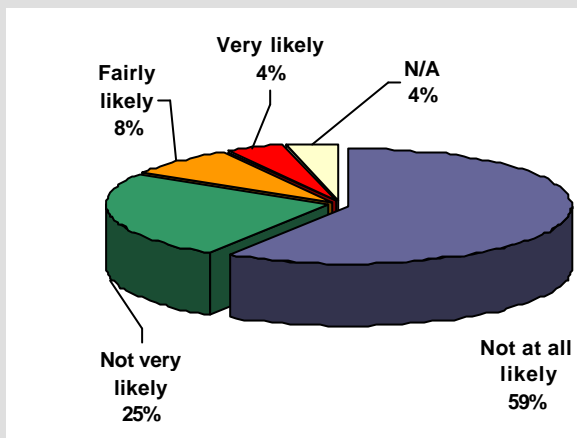
By 2005 third-generation (3G) high-speed networks and services have been launched in the large majority of Europe & CIS countries. According to a report by the European Commission, the 25 EU countries were home to 2.6 million 3G subscribers by the end of 2004, with at least 43 per cent 3G population coverage. This represents only a fraction and less than one percent of the EU's total mobile subscribers. On the user side, few have yet turned their third generation cellular phones into minicomputers. While the technological developments allow for highly sophisticated applications, users have encountered a number of barriers. Devices are still not user-friendly

²⁰ World Market Research Centre. March 24, 2005. Europe Regional: Day of Reckoning for Mobile Data

enough and remain unreliable for customers. Other cited problems include complicated billing systems and limited network coverage. Research undertaken by the UK's regulator, Ofcom, recently revealed that only twelve percent of existing mobile phone subscribers were considering a 3G phone over the next 12 months (Figure 6).

Figure 6: How likely are UK mobile phone users to get a 3G phone?

Proportion of replies by UK adult mobile phone owners, 2004



Source: Ofcom.

While current statistics put the media hype surrounding 3G somewhat into perspective, developments may evolve rapidly, particularly given more and more operators' efforts to increase the number of 3G subscribers. In Sweden operators offered a variety of incentives to increase the number of 3G subscribers and by November 2004, some six percent of the country's mobile subscribers were using 3G services.²¹

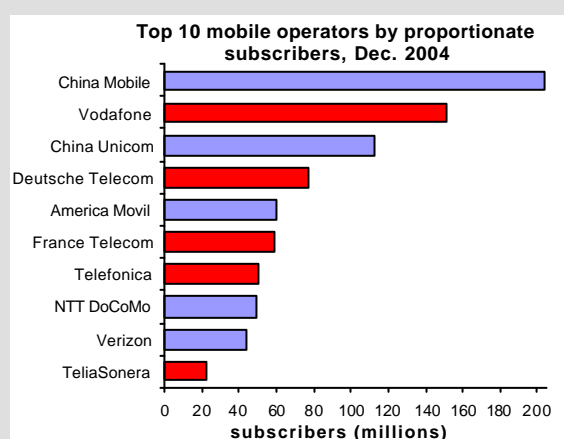
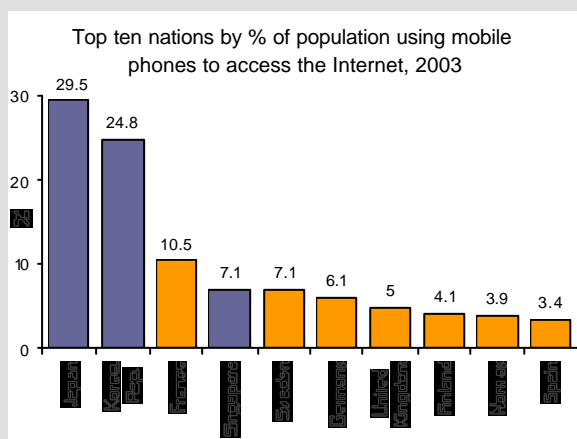
A recent report by Telecommunications Management Group (TMG), analyzing countries' uptake in using mobile handsets to download entertainment, exchange picture messages and access the Internet shows Europe's strong position. While Asia's Japan and the Republic of Korea take the lead, seven out of the top ten nations in terms of mobile Internet access are European. Within Europe, France has the highest

percentage of the population that uses a mobile phone to access the Internet. The Nordic countries are highly represented, with Sweden, Finland, and Norway in the top ten (Figure 7, left).

Europe's strong position in the mobile world is further exemplified by the number of large operators that it has produced. Measured by subscribers, five out of the top ten operators worldwide are from Europe. While China Mobile is the operator with the largest number of proportionate subscribers, the five European operators – from the UK, Germany, France, Spain and Sweden, have, particularly through their international operations within and outside of Europe, managed to rank amongst the top ten (see Figure 7, right).

Figure 7: European mobile Internet and mobile operators

Top ten nations by percentage of population using mobile phones to access the Internet, 2003 (left) and top ten mobile operators by proportionate subscribers, December 2004 (right)



Source: TMG (left chart). ITU (right chart).

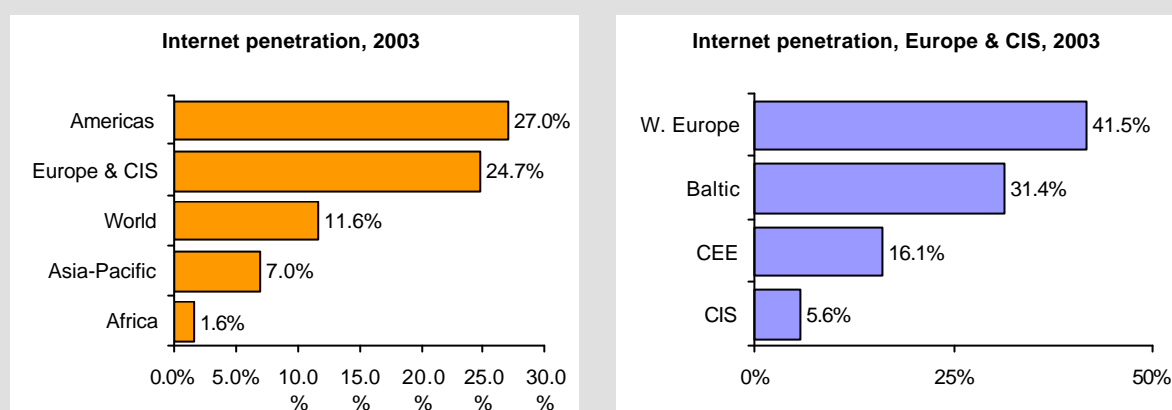
²¹ Vodafone, for example, offered customers who bought a 3G handset and subscription before February 2005, one year of free video calls. See World Market Research Centre. January 20, 2005. Europe Regional: Day of Reckoning for Mobile Data.

4. Internet and Broadband – lower price, higher speed

While Europe leads in terms of worldwide mobile penetration, its 2003 Internet penetration level of 24.7 percent positions it just behind the Americas, which leads with 27 percent. That year, both regions were far ahead of the world average of 11.6 percent and the average penetration rate in Europe & CIS was more than three times as high as that in Asia-Pacific (7 percent) and fifteen times as high as Africa's (1.6 percent) (Figure 8, left). There is a major gap between Internet penetration rates within Europe & CIS, as well. In 2003 Western Europe lead at a high 42.9 percent, followed by the Baltic States (31.4 percent), CEE (16.1 percent) and trailed by CIS (5.6 percent) (Figure 8, right).

Figure 8: Internet use in Europe

Internet penetration rates, by global regions, 2003 (left) and Internet penetration rates within Europe & CIS, by region, 2003 (right)



Source: ITU World Telecommunication Indicators Database.

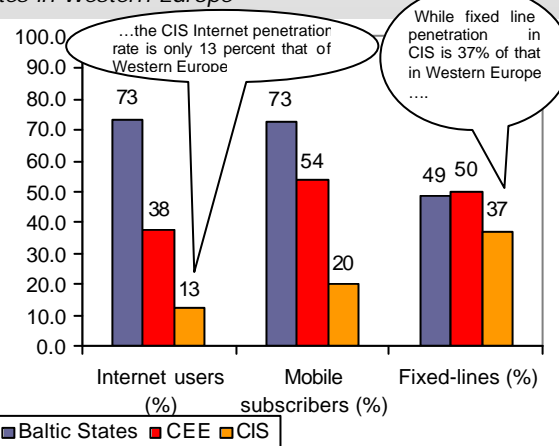
A few countries stand out. Estonia, and Latvia, for example, had 2003 penetration rates of 44 and 40 percent, respectively, higher than many Western European countries, including Spain (24 percent), Italy (34 percent), and Greece (15 percent). In Central & Eastern Europe, Slovenia, with 40 percent of its population online in 2003, beats many of its neighbours (Table 4).

Internet penetration growth rates in the region as a whole have been falling, from a high 70.6 percent in 1998/1999 but continue to stand at over 20 percent for the last two years. In 2003, CIS, the region with the lowest penetration, has the second highest growth rate of close to 80 percent, a development that suggests that the digital divide is narrowing to some extent. That year growth was strongest in the three Baltic States, with an increase of almost 79 percent, allowing them to catch up with Western European levels.

Internet penetration levels show that the digital divide that separated CIS from the rest of Europe is greater in newer ICTs (mobile and Internet) than in fixed lines. Indeed, penetration levels for Internet use in CIS are only 13 percent of those in Western Europe. The gap is slightly smaller in the mobile sector, where CIS penetration rates stand at one fifth (20%) of those in Western Europe. The gap is smallest in the "traditional" ICTs of fixed lines where CIS' penetration level represents 37 percent of that of Western Europe. The Baltic States, on the contrary, have managed to leapfrog in newer ICTs. Their Internet and mobile penetration rates

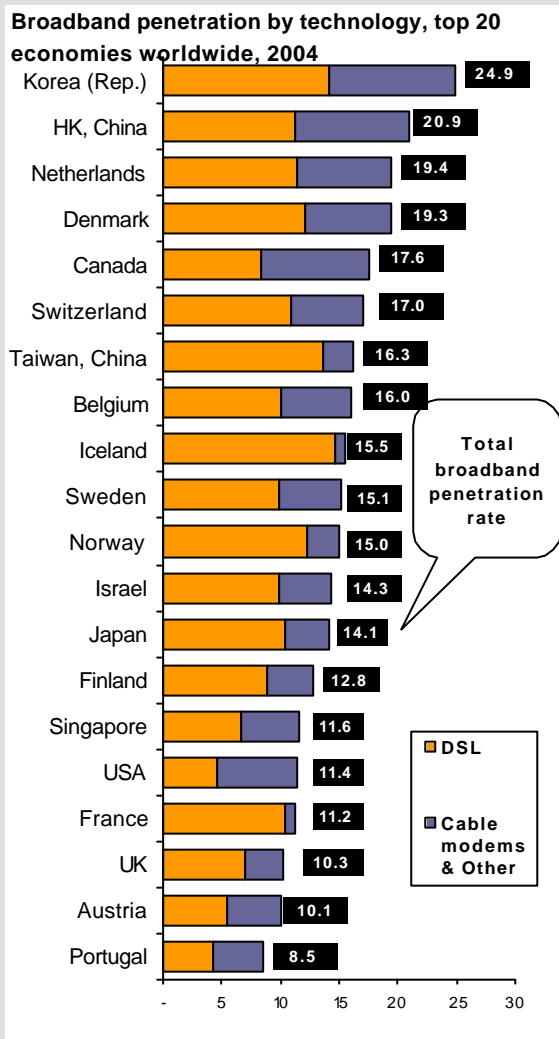
Figure 9: How big is Europe & CIS' digital divide?

ICT penetration rates as a percentage of penetration rates in Western Europe



Source: ITU.

Figure 10: Who are the fastest?



Source: ITU, OECD.

represent 73 percent of those in Western Europe, while their fixed line penetration is only about half of that in Western Europe. CEE has about half the mobile and fixed line penetration levels of Western Europe but lags further behind in Internet use (Figure 9).

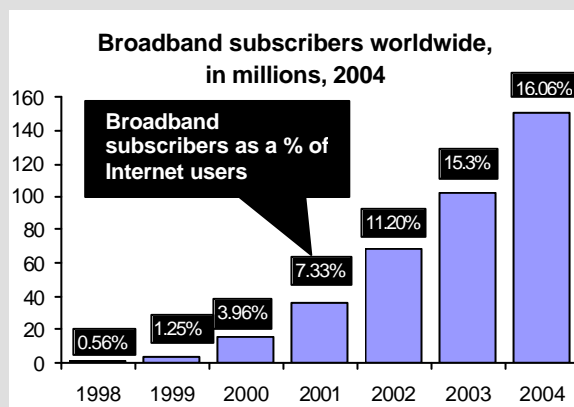
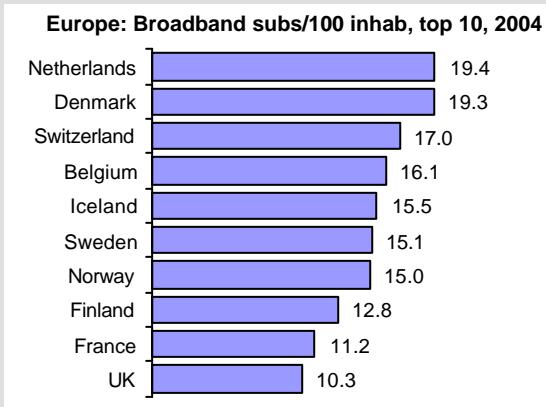
By 2003 twenty-one percent of all Internet subscribers in Europe & CIS had a broadband connection, compared to 15.3 percent globally (Figure 11, right). Within the region, the Baltic States, where 48 percent of all Internet subscribers had a high-speed connection, clearly stand out. This compares to 'only' 22 percent of high-speed Internet subscribers in Western Europe. Estonia's broadband penetration rate of 58 percent of subscribers places it second within the region, just behind Belgium, where 59.5 percent of Internet subscribers have high-speed access.

Twelve European economies, the Netherlands ahead of its neighbours, rank among the top 20 economies worldwide in terms of broadband penetration (Figure 10). Other broadband champions include Denmark, Switzerland, Belgium and Iceland (Figure 11, left).

Today some 90 percent of broadband Internet connections in Europe rely on ADSL, which uses existing (fixed line) copper wires. To offset increased competition and lower prices, combined with constant fixed line phone calls, phone companies have taken advantage of broadband to increase their revenue and (together with the booming mobile sector) often balance the overall financial situation. Cross border competition has

Figure 11: Top 15 economies

Top 10 countries in Europe by broadband penetration, 2004 (left) and broadband subscribers worldwide 1998-2004 (right)



Source: ITU World Telecommunication Indicators Database.

also largely increased with many European telecommunication operators offering their services across Europe. Telecom Italia operates in France, Netherlands and Germany, and BT Group has expanded to Italy, Spain, Germany and other countries. Deutsche Telekom has high-speed Internet operations in France, Spain, Austria, and Switzerland.

Europe's telecommunication/ICT markets and trends 2003/2004

The main beneficiaries of increased competition are consumers who have benefited from lower prices and higher access speeds. Apart from competition amongst fixed line incumbents, ISPs and cable operators, regulatory intervention in incumbent wholesale xDSL prices have helped to reduce cost and increase speeds. While the price for a basic broadband residential connection has declined by as much as 30 percent in a number of countries in 2004, the basic speed of broadband has constantly been increased since 2002. In Spain, Telefonica today offers ADSL at 512 Kbps for 29 Euros, down from its previous 39 euros. In March 2005, and following the country's leading broadband cable operator's minimum speed increase to 3Mbps, Telefonica announced plans to double the speed to 1 Mbps for the same price, which would be its second move to double ADSL speeds in six months. Facing increasing competition the dominant Czech telecommunication operator Cesky Telecom cut its monthly broadband Internet access fees by 44 percent to US\$ 40.86.²² Similar developments are taking place in other European markets. A July 2004 international comparison for broadband prices showed that Asia, not Europe, was leading in terms of price/speed. Four out of the top five ranked economies were from Asia, and only one European country (Sweden) made it to the top five. In the expanded top 15 list, however, Europe fares better, with eight countries ranked (Table 1). The comparison also shows that broadband prices have come down a lot across almost all countries and Sweden's price fell by almost 100 percent in just one year. The broadband sector is likely to go through a number of important changes, particularly with the appearance of convergent and disruptive technologies and the trend towards bundled offerings. Prices are equally expected to fall even more.

Table 1: Mirror, mirror on the wall, who is the cheapest of them all?

Comparative prices for broadband, top 15 broadband economies, July 2004, ranked by USD per 100 kbit/s

<i>Economy</i>	<i>Company</i>	<i>Technology</i>	<i>Speed (kbit/s)</i>	<i>Price per month (USD)</i>	<i>Price per 100 kbit/s</i>	<i>Change, 2003-04</i>
Japan	KDDI	DSL	47'000	25.85	0.06	-44.1%
Korea (Rep.)	Hanaro	DSL	20'000	47.86	0.24	-4.0%
Sweden	Bredbandsbolaget	FTTH/DSL	24'000	58.63	0.24	-97.4%
Taiwan, China	Chunghwa	DSL	8'000	35.30	0.44	n.a.
Hong Kong, China	Netvigator	DSL	6'000	51.03	0.85	-33.2%
Canada	Bell	DSL	3'000	34.05	1.13	-66.6%
Belgium	Belgacom	DSL	3'300	48.40	1.47	19.6%
Singapore	StarHub	Cable	3'000	46.50	1.55	-31.3%
Switzerland	SwissCom	DSL	2'400	77.88	3.24	-73.3%
USA	Comcast	Cable	3'000	52.99	1.77	-50.0%
Netherlands	Wanadoo	DSL	1'120	42.35	3.78	5.5%
Finland	Sonera	DSL	2'048	82.28	4.02	-53.6%
Iceland	Vodafone	DSL	500	21.00	4.20	-37.1%
Denmark	Tele2	DSL	2'048	86.32	4.21	-32.1%
Norway	Tele2	DSL	1'024	62.95	6.15	-11.0%
Average			8'429	51.56	2.22	-36.3%
Best practice (top 20%)			30'333	44.12	0.18	-48.5%

Source: ITU Internet Reports. The Portable Internet. ITU. September 2004.

²² World Market Research Centre. January 18, 2005. Czech Republic: Cesky Telecom Cuts Broadband Internet Prices

Box 2: From EU15 to EU25... the dynamics and strengths of a Union

A common regulatory framework, open markets, and technical cooperation are some of the strengths and advantages that come with Europe's marriage.

Efforts to harmonize, liberalize and regulate the European telecommunication sector go back to the end of the 1980s, with the overall objective to promote the competitiveness of the (then) single European Community market and to stimulate investments in an environment of rapidly developing technologies. Today the telecommunications sector is a high growth area in the European economy in its own right as well as an important stimulant for the economy as a whole. With the enlargement of the European Union from the previously 15 member states to 25 (on 1 May 2004) the new central and eastern European countries adopted the EU communications policy legislation, including a competitive market approach and a fully independent regulatory authority. This includes the New Regulatory Framework (NRF) for telecommunication, which, enacted in 2003, is aimed at regulatory harmonization and the promotion of competition. It applies to all 25 member states and is expected to be fully implemented in the near future.

Another European framework is the eEurope (and eEurope+) initiative, which is aimed at helping Europe – including its new members - to become an inclusive information society. This has included the expansion of infrastructure and Internet connectivity and the adoption of a legal e-commerce framework. Expanded to the *eEurope 2005 Action Plan*, it now goes beyond infrastructure-based criteria and focuses on the delivery of broadband infrastructure and services, including e-government and e-health.

Linked to the Europe Union's common strategy is the development and availability of comparable statistics to measure progress and identify weaknesses in the adoption of Information and Communication Technologies. The EU has identified a list of e-benchmarks – usually collected by National Statistical Offices - that cover such areas as ICT infrastructure, skills, tariffs, uptake & use, R&D, network security, Public Internet Access Points, e-commerce, etc. To measure progress made, the EU further carries out specific studies to compare countries over time, and against each other, on specific issues. An example is a recently published survey on the sophistication of online government services. The study highlights the progress made in the EU, where today over 90 percent of public service providers have an on-line presence, and 40 percent of basic public services are fully interactive. The study further highlights the shrinking gap between the 10 new Member States and the pre-enlargement EU 15, with the new Member States today standing where the EU 15 ones stood just two years ago.

Besides a shared legal framework and common statistics, the EU is uniting its forces in the area of mobile technology to keep on top of developments. Europe is eager to maintain its traditional head start and dominance in the mobile sector, which is mainly the result of the region's homogeneous implementation of GSM technology in the early 1990s. Recent technological developments towards the migration to 3G have made Europe's technological status unclear and particularly Asia has been able to catch up. A recent announcement by some 15 telecommunication players (equipment vendors, component makers and operators) to launch the eMobility Platform, a project to develop a comprehensive research agenda for mobile technology evolution, highlights the region's private sector efforts to unite its forces.

Source: EU & eMobility Platform.

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Table 2: Europe & CIS, Telecom projections, 1995-2005

	Actual										Estimate	Forecast
	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	
Main telephone lines (000s)	269'373	280'835	293'423	304'059	314'398	324'333	330'823	332'702	334'679	336'774	338'990	
Baltic States	2'057	2'171	2'263	2'354	2'400	2'445	2'380	2'112	1'947	1'795	1'655	
CEE	35'263	38'741	42'851	46'917	50'263	52'487	53'746	53'025	53'967	54'926	55'901	
CIS	42'089	44'044	46'720	48'213	50'464	52'114	54'020	56'904	59'090	61'360	63'717	
Western	189'964	195'879	201'589	206'575	211'272	217'287	220'678	220'661	219'675	218'694	217'717	
Per 100 inhabitants	31.3	32.6	34.0	35.2	36.3	37.4	37.9	38.2	38.4	38.7	39.0	
Baltic States	26.6	28.3	29.6	30.9	31.7	32.4	31.9	29.6	27.4	25.3	23.5	
CEE	19.1	20.9	23.2	25.3	26.9	28.0	28.2	27.8	28.2	28.5	28.9	
CIS	14.8	15.5	16.4	17.0	17.8	18.3	19.1	20.1	20.9	21.7	22.6	
Western	49.5	50.9	52.3	53.5	54.4	55.9	56.3	56.5	56.4	56.3	56.2	
Mobile cellular subscribers (000s)	24'095	37'991	61'112	104'626	182'202	292'276	361'257	410'141	475'106	554'969	616'522	
Baltic States	60	149	387	682	993	1'482	2'326	3'444	4'440	5'082	5'449	
CEE	985	1'978	4'561	9'497	19'854	38'773	55'872	72'795	88'863	104'641	113'930	
CIS	123	299	659	1'076	2'237	5'171	12'142	24'836	48'288	91'770	133'088	
Western	22'927	35'564	55'506	93'371	159'118	246'850	290'917	309'066	333'516	353'477	364'054	
Per 100 inhabitants	2.8	4.4	7.1	12.1	21.0	33.7	41.4	47.1	54.6	63.8	70.9	
Baltic States	0.8	1.9	5.1	9.0	13.1	19.6	31.2	48.2	62.4	71.7	77.2	
CEE	0.5	1.1	2.5	5.1	10.6	20.7	29.4	38.2	46.4	54.4	58.9	
CIS	0.0	0.1	0.2	0.4	0.8	1.8	4.3	8.8	17.1	32.5	47.1	
Western	6.0	9.24	14.4	24.2	41.0	63.5	74.3	79.1	85.6	91.0	94.0	
Total telephone subscribers (000s)	293'468	318'825	354'535	408'685	496'601	616'609	692'080	742'842	809'785	891'743	955'512	
Baltic States	2'117	2'320	2'650	3'036	3'393	3'927	4'706	5'556	6'387	6'877	7'104	
CEE	36'248	40'719	47'411	56'414	70'117	91'260	109'618	125'820	142'829	159'566	169'832	
CIS	42'212	44'343	47'378	49'289	52'701	57'285	66'162	81'740	107'378	153'130	196'805	
Western	212'891	231'443	257'095	299'946	370'390	464'137	511'595	529'726	553'191	572'171	581'771	
Per 100 inhabitants	34.1	37.0	41.1	47.3	57.3	71.0	79.4	85.3	93.0	102.5	109.8	
Baltic States	27.4	30.2	34.7	39.9	44.8	52.0	63.1	77.7	89.8	97.1	100.7	
CEE	19.7	22.0	25.6	30.4	37.6	48.7	57.6	66.0	74.6	82.9	87.8	
CIS	14.8	15.6	16.7	17.4	18.5	20.2	23.4	28.9	38.0	54.2	69.7	
Western	55.5	60.1	66.7	77.6	95.4	119.3	130.6	135.6	142.0	147.3	150.2	
Internet users (000s)	8'395	15'339	27'906	45'357	77'630	110'378	141'916	176'208	210'623	249'049	273'218	
Baltic States	40	80	165	300	408	767	850	1'254	2'232	3'102	3'706	
CEE	661	1'252	2'242	4'161	6'714	9'516	14'651	23'794	30'798	35'331	37'931	
CIS	247	465	827	1'409	1'925	3'845	5'974	8'972	15'803	25'053	32'385	
Western	7'447	13'542	24'672	39'487	68'583	96'250	120'441	142'188	161'790	185'563	199'196	
Per 100 inhabitants	1.0	1.8	3.2	5.3	9.0	12.7	16.3	20.2	24.2	28.6	31.4	
Baltic States	0.5	1.0	2.2	3.9	5.4	10.1	11.4	17.5	31.4	43.8	52.5	
CEE	0.4	0.7	1.2	2.2	3.6	5.1	7.7	12.5	16.1	18.4	19.6	
CIS	0.1	0.2	0.3	0.5	0.7	1.4	2.1	3.2	5.6	8.9	11.5	
Western	1.9	3.5	6.4	10.2	17.7	24.7	30.7	36.4	41.5	47.8	51.4	

Provisional. Updated 04.04.2005
 Source: Telecommunication Development Bureau (BDT), International Telecommunication Union (ITU)

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		Europe & CIS							
		Population		Main telephone lines		Mobile subscribers		Internet users	
		2003	000s	p.100	000s	p.100	000s	p.100	
1	Estonia	1'351.0	461.0	34.12	1'050.2	77.74	600.0	44.41	
2	Latvia	2'319.2	661.9	28.54	1'219.6	52.58	936.0	40.36	
3	Lithuania	3'445.7	824.2	23.92	2'169.9	62.97	695.7	20.19	
Baltic States		7'115.9	1'947.1	27.36	4'439.7	62.39	2'231.7	31.36	
4	Albania	3'072.8	255.0	8.30	1'100.0	35.80	30.0	0.98	
5	Bosnia	3'832.1	938.0	24.48	1'050.0	27.40	150.0	3.91	
6	Bulgaria	7'506.6	2'856.1	38.05	3'500.9	46.64	1'545.1	20.58	
7	Croatia	4'374.0	1'700.0	38.87	2'553.0	58.37	1'014.0	23.18	
8	Cyprus	741.6	424.1	57.19	551.8	74.40	250.0	33.71	
9	Czech Republic	10'064.6	3'626.3	36.03	9'708.7	96.46	3'100.0	30.80	
10	Hungary	10'334.2	3'602.9	34.86	7'944.6	76.88	2'400.0	23.22	
11	Malta	400.0	208.3	52.07	290.0	72.50	190.0	47.50	
12	Poland	38'589.0	11'862.2	30.74	17'401.2	45.09	8'970.0	23.24	
13	Romania	21'733.6	4'333.4	19.94	7'046.4	32.42	4'000.0	18.40	
14	Serbia and Montenegro	10'760.1	2'611.7	24.27	3'634.6	33.78	847.0	7.87	
15	Slovak Republic	5'377.0	1'294.7	24.08	3'678.8	68.42	1'375.8	25.59	
16	Slovenia	1'997.0	812.3	40.68	1'739.1	87.09	800.0	40.06	
17	TFYR Macedonia	2'084.2	525.0	25.19	776.0	37.23	126.0	6.05	
18	Turkey	70'712.0	18'916.7	26.75	27'887.5	39.44	6'000.0	8.49	
CEE		191'578.8	53'966.8	28.17	88'862.6	46.38	30'798.0	16.08	
19	Armenia	3'801.0	563.7	14.83	114.4	3.01	140.00	3.68	
20	Azerbaijan	8'234.1	941.4	11.43	1'055.0	12.81	350.0	4.25	
21	Belarus	9'873.2	3'071.3	31.11	1'118.0	11.32	1'391.9	14.10	
22	Georgia	4'892.7	657.1	13.43	711.2	14.54	117.0	2.39	
23	Kazakhstan	15'842.0	2'228.4	14.07	1'330.7	8.40	300.0	1.89	
24	Kyrgyzstan	5'206.4	396.2	7.61	138.3	2.66	200.0	3.84	
25	Moldova	3'606.8	791.1	21.93	475.9	13.20	288.0	7.98	
26	Russia	146'412.2	36'993.0	25.27	36'500.0	24.93	10'000.0	6.83	
27	Tajikistan	6'542.3	245.2	3.75	47.6	0.73	4.12	0.06	
28	Turkmenistan	4'867.1	376.1	7.73	9.2	0.19	20.0	0.41	
29	Ukraine	47'600.0	11'109.5	23.34	6'466.5	13.59	2'500.0	5.25	
30	Uzbekistan	25'614.1	1'717.1	6.70	320.8	1.25	492.0	1.92	
CIS		282'491.9	59'090.1	20.92	48'287.7	17.09	15'803.0	5.59	
31	Andorra	84.2	45.1	53.52	51.9	61.63	10.0	11.93	
32	Austria	8'073.0	3'881.0	48.07	7'094.5	87.88	3'730.0	46.20	
33	Belgium	10'372.5	5'074.1	48.92	8'222.9	79.28	4'000.0	38.56	
34	Denmark	5'397.6	3'612.8	66.93	4'767.3	88.32	2'920.0	54.10	
35	Finland	5'219.0	2'567.6	49.20	4'747.1	90.96	2'786.0	53.38	
36	France	59'900.3	33'905.4	56.60	41'683.1	69.59	21'900.0	36.56	
37	Germany	82'531.7	54'250.0	65.73	64'800.0	78.52	39'000.0	47.25	
38	Greece	11'456.8	5'200.2	45.39	10'337.0	90.23	1'718.4	15.00	
39	Guernsey	55.8	57.0	102.15	41.9	75.09	33.0	59.14	
40	Iceland	289.0	190.7	65.99	279.1	96.56	195.0	67.47	
41	Ireland	3'978.9	1'955.0	49.13	3'500.0	87.96	1'260.0	31.67	
42	Italy	54'951.6	26'596.0	48.40	55'918.0	101.76	18'500.0	33.67	
43	Liechtenstein	34.3	19.9	58.03	25.0	72.90	20.0	58.32	
44	Luxembourg	451.5	360.1	79.75	539.0	119.38	170.0	37.65	
45	Monaco	32.6	33.5	102.76	15.1	46.26	16.0	49.08	
46	Netherlands	16'285.2	10'004.0	61.43	12'500.0	76.76	8'500.0	52.19	
47	Norway	4'580.6	3'268.1	71.35	4'163.4	90.89	1'583.3	34.57	
48	Portugal	10'407.0	4'278.8	41.11	9'350.6	89.85	2'674.0	25.69	
49	San Marino	27.0	20.7	76.63	16.9	62.59	14.5	53.63	
50	Spain	40'939.6	17'567.5	42.91	37'506.7	91.61	9'789.0	23.91	
51	Sweden	8'976.1	6'873.0	76.57	8'801.0	98.05	5'655.0	63.00	
52	Switzerland	7'317.7	5'323.5	72.75	6'172.0	84.34	2'916.0	39.85	
53	United Kingdom	58'117.2	34'591.0	59.52	52'984.0	91.17	34'400.0	59.19	
Western		389'479.1	219'675.0	56.40	333'516.4	85.63	161'790.3	41.54	
Europe & CIS		870'665.7	334'679.0	38.44	475'106.3	54.57	210'623.0	24.19	

Note. For data comparability and coverage, see the technical notes.

Figures in italics are estimates or refer to years other than those specified.

Source: ITU.

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Table 4: Europe & CIS, Internet

		Internet		Broadband			International bandwidth	
		subscribers	Total	As % of total	CAGR	Total	Bits per	
		(000s)	(000s)	subscribers	(%)	(Mbps)	inhabitant	
		2003	2003	2003	2002-2003	2003	2003	
1	Estonia	137.3	79.6	58.0	174.2	1'600.0	1'184.3	
2	Latvia	47.0	19.5	41.5	195.3	510.0	219.9	
3	Lithuania	161.3	66.8	41.4	334.0	328.0	94.7	
	Baltic States	345.7	165.9	48.0	219.2	2'438.0	341.8	
4	Albania	20.0	-	-	-	12.0	3.9	
5	Bosnia	87.0	0.2	0.2	100.0	...	...
6	Bulgaria	6.2	-	-	-	189.0	25.2	
7	Croatia	600.0	...	...	...	180.0	41.2
8	Cyprus	57.2	10.0	17.5	170.7	245.0	330.4	
9	Czech Republic	2'148.6	34.7	1.6	226.7	22'206.0	2'189.1	
10	Hungary	673.7	264.3	39.2	237.1	10'000.0	967.7	
11	Malta	76.8	22.7	29.6	128.6	310.0	775.0	
12	Poland	2'727.3	193.8	7.1	159.2	6'316.0	163.6	
13	Romania	906.4	39.3	4.3	248.7	2'484.0	114.3	
14	Serbia and Montenegro	335.0	...	...	...	10.0	0.9
15	Slovak Republic	182.1	...	...	...	9'931.0	1'846.9
16	Slovenia	240.5	58.0	24.1	102.2	2'510.0	1'256.9	
17	TFYR Macedonia	...	...	...	...	50.0	24.2
18	Turkey	1'000.0	199.3	19.9	940.0	2'200.0	31.1	
	CEE	9'060.9	822.4	10.4	217.6	56'643.0	301.7	
19	Armenia	70.0	0.01	0.01	125.0	28.0	7.4	
20	Azerbaijan	50.0	...	...	...	2.1	0.3
21	Belarus	22.7	0.1	0.5	615.0	200.0	20.3	
22	Georgia	4.1	1.4	34.4	153.3	...	...
23	Kazakhstan	...	...	...	...	48.0	3.0
24	Kyrgyzstan	6.5	-	-	-	19.3	3.7	
25	Moldova	16.5	0.6	3.6	142.8	79.2	22.0	
26	Russia	1'890.5	11.0	0.6	100.0	8'967.3	61.2	
27	Tajikistan	0.5	0.0	2.2	...	2.0	0.3	
28	Turkmenistan	2.2	-	-	-	...	...
29	Ukraine	...	...	...	...	314.1	6.5
30	Uzbekistan	37.4	2.8	7.4	...	32.0	1.2	
	CIS	2'100.3	15.9	0.8	106.3	9'692.0	35.5	
31	Andorra	6.3	3.6	57.1	313.7	188.0	2'232.8	
32	Austria	1'300.0	619.0	47.6	114.7	36'076.0	4'479.8	
33	Belgium	1'909.1	1'135.0	59.5	130.6	84'024.1	8'113.7	
34	Denmark	2'717.8	716.9	26.4	162.7	109'204.0	20'319.8	
35	Finland	1'319.1	491.1	37.2	179.6	16'587.0	3'185.5	
36	France	10'524.7	3'500.0	33.3	208.0	200'000.0	3'353.6	
37	Germany	23'000.0	4'560.0	19.8	142.3	260'667.8	3'158.2	
38	Greece	560.0	10.5	1.9	...	2'446.2	222.0	
39	Guernsey	...	...	...	...	...	...
40	Iceland	50.0	10.4	...	43.0	68.0	236.1	
41	Ireland	1'200.0	41.8	3.5	394.3	13'501.0	3'434.5	
42	Italy	17'000.0	2'200.0	12.9	258.8	119'794.0	2'180.0	
43	Liechtenstein	14.0	1.4	...	100.0	...	...
44	Luxembourg	107.6	15.4	14.3	269.5	1'469.0	3'293.7	
45	Monaco	6.8	4.9	...	...	100.0	3'067.5
46	Netherlands	5'000.0	1'628.0	32.6	...	50'000.0	3'070.3	
47	Norway	1'278.1	385.0	30.1	187.5	22'696.1	4'985.7	
48	Portugal	7'211.2	503.1	7.0	193.9	4'019.0	388.9	
49	San Marino	3.5	0.6	17.1	...	4.0	148.1	
50	Spain	5'217.5	2'202.0	42.2	176.5	46'554.0	1'144.3	
51	Sweden	3'211.0	967.5	30.1	135.1	94'896.0	10'611.2	
52	Switzerland	2'713.1	703.0	25.9	154.4	65'827.3	9'040.6	
53	United Kingdom	13'100.0	1'821.0	13.9	100.0	319'663.3	5'410.0	
	Western	97'449.8	21'520.1	22.1	150.6	1'447'784.8	19'223.8	
	Europe & CIS	108'956.6	22'524.3	20.9	153.2	1'516'557.8	1'768.9	

Note: Figures in italics are estimates or refer to years other than those specified.

Source: ITU.