

## INFORMATION AND COMMUNICATION TECHNOLOGIES

### Changing Landscape

2005 has been a year when mobile telecommunications attracted the greatest amount of foreign investment in three transactions worth a total \$14.4 billion. The privatization of Turk Telekom, the former fixed phone line monopoly, and the entrance of Vodafone, the world's largest mobile phone company, to Turkey through its purchase of Telsim with a \$4.5 billion offer changed the industry's landscape. Majority shares of Turk Telekom were transferred to the Oger Telecoms Joint Venture Group for \$6.5 billion. Further, Alfa Group acquired 3.22% share in Turkcell, Turkey's number one mobile phone services company under a deal of \$3.3 billion.

Key players, which merged with the world's leading mobile operators, are now closely watching the competition and quality of their services. With the entry of giant global players, the market is expected to continue to grow at full speed through introduction of new services and products. Recent M&As pose significant growth opportunities in almost all segments of the market over the next 10 years. Much of the past infrastructure upgrade has been in network digitalisation and modernization. Future upgrades are expected to focus on increasing bandwidth and the implementation of next generation networks to cater for growing broadband usage and broadband services. As for the regulatory issues, MNP, 3G licenses, new legislations regarding MVNO and new Electronic Communications Law will be hot topics on Telecommunications Authority's agenda in 2006.

Telecommunications market was worth \$17.7 billion in 2005, with carrier services the major element in this. The market grew 16% in 2005 compared to 2004 as the new fixed line backbone companies and ADSL systems are established.

Privatization of Turk Telekom is one of the key components of the government policy geared towards establishing a competitive market structure in all segments in order to help increase service quality and number of innovative and value-added services while reducing costs. Consequently, the market has been going through a restructuring phase designed to facilitate competition since 1994, when the mobile telephone services were liberalized. Other two components include the following:

- **Full liberalization:** In 2000, Turkey embarked on the shift from a classical state-dominated telecommunications sector to one structured and regulated in broad accordance with the EU directives. The Telecommunications Law Number 4502 of 2000 led to the establishment of the Telecommunication Authority - the first sector specific regulator in the country. With this, licensing criteria was made publicly available and the policy-making and regulatory functions of the government were separated.

The monopoly of Turk Telekom in voice communication and infrastructure formally ended in January 2004. On one hand the Telecommunications Authority is working hard on drafting regulations to further liberalize and regulate the market and to harmonize the relevant regulation with those of the EU, while on the other hand market players are entering into different segments of the market benefiting from the liberalization efforts.

- **Legislative alignment with the EU acquis.** As the country prepares itself for the accession, a new set of laws and regulations has been introduced,

which has been encouraging for the telecommunication market's new entrants. The National Program for the Adoption of the EU's Acquis includes a detailed program for the measures Turkey will take to harmonize its telecommunication legislation with that of the EU.

#### **Issuance of new licenses for value added services:**

Several private firms have obtained licenses for the introduction of new telecommunication services and over 220 40 Turkish private sector companies have obtained various licenses, including 44 long distance telephony service provider licenses. Some of the others are in the process of signing an interconnection agreement with Turk Telekom. The operators licensed by Telecommunications Authority (all of which have not necessarily launched service provision) are:

- ❑ Authorization Agreement: Turk Telekom (This will be converted to a concession agreement at the end of the privatization process)
- ❑ Concession Agreement: GSM operators Turkcell, Telsim and Avea
- ❑ Satellite Communications Licence: 23 operators
- ❑ Satellite Platform Licence: 1 operators
- ❑ GMPCS Mobile Telephony License: 5 operators
- ❑ Licence for Data Transmission over Terrestrial Lines: 22 operators
- ❑ Long Distance Telephone Service Licence: 44 operators
- ❑ PMR/PAMR Service Licence: 52 operators
- ❑ Internet Service Provider (ISP) Authorization: 128 operators

#### **PSTN and Telecommunications Hardware Market**

Until 1980 fixed telephone line penetration was barely 2.5%. With new investment in the 1980s, Turk Telekom raised penetration to current levels— making Turkey's PSTN network the fourteenth largest in the world and the fifth largest in Europe by subscriber volume by early 2000s, although revenue per subscriber is still very low. Half of investments were spent on digitalizing telephone exchanges, while other major investments included three communication satellites and an internet backbone. However PSTN investments slowed down as GSM networks were launched.

Further PSTN penetration is not expected while Turk Telekom aims to expand at data and value added services: Turk Telekom has been aggressively marketing ADSL targeting 1 million subscribers.

The hardware market should be expected to develop as domestic demand flourishes as the market fully liberalizes. In 2004 the telecommunications equipment market was an estimated \$1.9 billion in, showing indications of rebounding to its pre-economic crises (2000-2001) size of \$2.9 billion.

#### **GSM Market Still Booming**

This is still an attractive market with a mobile penetration rate of just 55% and expected extension of 3G services providing considerable business potential. Introduced in 1986 by Turk Telekom, mobile penetration boomed in 1994 with the granting of full licenses to Turkcell and Telsim. The third GSM player is Avea – a joint venture between Is Bank and Telecom Italia Mobile. Mobile subscribers increased from 34.4 million in 2004 to 43 million in 2005. Turkcell is the market leader with a

market share of 63%, followed by Telsim with 22%. The expectation is that the mobile subscribers will reach to 51 million in 2006.

Although about half of the market represents a mature market, the duration for model changes has come down to 1.8 years and this, together with a young and growing population and the ever-increasing level of national wealth, has placed Turkey on the list of top investment destination for the telecoms industry. Mobile telecommunications have proven that Turkish market provides foreign investors with unpredictable growth opportunities that outperformed other markets with similar size and income.

<b>TELECOMMUNICATION INDICATORS, 2000-2005</b>				
<b>Million</b>				
	<b>PSTN Subscribers</b>	<b>Penetration %</b>	<b>Internet Users</b>	<b>GSM Subscribers</b>
2000	18.4	28	2.5	15.1
2001	18.9	28	3.5	18.7
2002	18.9	27	4.3	22.7
2003	18.9	27	6.0	27.7
2004	19.1	27	10.2	34.4
2005	19.0	26	15	43.0

*Source:* Telecommunications Authority, State Planning Organisation

### **Market Size**

Telecommunications market looks sizeable with a total 21.5 million telephone lines and about 43 million mobile subscribers. It is growing at full speed and poses significant growth opportunities in almost all segments over the next 10 years.

The ICT market was estimated to total \$17.7 billion in 2005. Telecommunications was worth \$13.8 billion, with carrier services the major element in this. The IT market added a further \$3.9 billion. The ICT is increasing its share in GDP and this growth is expected to be faster in the following years. In 2005, carrier services and telecommunications equipment together have a share of 78% in total ICT market. As the new fixed line backbone companies and ADSL systems are established, the telecommunications market is estimated to worth over \$16 billion in 2006, with a growth rate of 17.4% over 2005.

The IT market is relatively small with a share of 22% and is dominated by hardware sales. 50% of Turkish IT market was made up of hardware and 33% by services in 2005. Turkey has one of the fastest growing IT markets of the world. When compared to developed countries, Turkey has still has a very low PC ownership ratio around 10). 50% of the population is under the age of 25. 37 million are between the ages of 15 and 44. This segment of the population offers a high potential in terms of consumption of technology products not only computers) and accessories. Accordingly, growth of computer sales in Anatolian cities has been remarkable over the recent years.

<b>BREAKDOWN OF ICT MARKET, 2003-06</b>	
<b>\$ million</b>	

	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006 e</b>
IT hardware	1,540	1,767	1,980	2,300
Software	393	452	542	645
Services	847	1,121	1,290	1,440
Consumer	90	113	134	150
<b>Information Technology</b>	<b>2,870</b>	<b>3,455</b>	<b>3,946</b>	<b>4,535</b>
Telecommunication equipment	1,263	1,663	1,900	2,100
Carrier services	7,329	10,151	11,900	14,100
<b>Communication Technology</b>	<b>8,592</b>	<b>11,815</b>	<b>13,800</b>	<b>16,200</b>
<i>Total</i>	<i>11,462</i>	<i>15,270</i>	<i>17,746</i>	<i>20,735</i>

*Source: Interpro*

The market has experienced double-digit growth over the past five years except during the 2001 economic crisis. Before the 2000-2001 twin economic crisis, yearly desktop PC sales –the figure considered representative of the sector as a whole- were 550,000 to 650,000 PC-equivalents. In 2001, the IT demand shrunk by 60% to 70%. In 2004 the sector has finally rebounded to reach the year 2000 figures and in 2005, surpassed the long-pronounced “one million PC per year” strategic target. Considering the no-name products, which account between 30-40% of total market recently, the demand for PC was estimated as over 2.2 million in 2005.

<b>PC SALES, 2002-04</b>				
<b>units</b>				
	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>
Desktop	344,000	516,000	710,000	1,030,000
Laptop	68,000	140,000	221,000	570,000
Total	412,000	656,000	931,000	1,600,000 (1)

(1)With no-names taken into account, this exceeds 2.2 million

*Source : IDC*

There is no manufacturing in Turkey of the principal components of computers - mainboard, hard disk, RAM, graphic card, processor, monitor, mouse, keyboard and case. Local manufacturing activity is limited to assembly. There are long-term prospects for Turkey becoming strong in software exports. The current share of software in total market is 14%, which is far below worldwide averages. IT sector views software as its strategic growth segment for exports

Although, Turkey has a relatively big ICT market, its ICT production is not satisfactory. Most of the inputs such as hardware, software and computer equipment are imported, and the high skill base in IT tends to be used as an assembly shop by multinationals. Imports comprised 96% of the ICT foreign trade in 2000, declining to 85% in 2005.

<b>ICT MARKET BALANCE, 1990-05</b>
<b>\$ million</b>

	<b>1990</b>	<b>2000</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>
Demand	2,975	11,341	10,150	11,462	15,270	17,746
Production	2,394	7,590	8,481	9,599	12,460	13,932
Imports	614	3,898	1,788	2,432	3,455	4,637
Exports	33	147	119	569	645	823

*Source* : SPO, Interpro

Key telecommunication infrastructure equipment vendors, Ericsson, Siemens, Alcatel and Nortel, are the top fixed line and GSM infrastructure equipment providers. The major software suppliers include Microsoft, IBM, Logo, Oracle, SUN Microsystems and Likom, while hardware providers include Beko, Vestel, Escort, Dell, Hewlett Packard, Avea and Epson. Operators of mobile telephony services are Turkcell, Telsim and TT&TIM (a merger of Aycell and Aria).

### Foreign Trade

Exports of the ICT sector are much lower than its imports, corresponding to some 17% of imports in 2005. This signifies a huge gap of approximately \$4 billion in the ICT foreign trade.

As regards the telecommunications sector, the increase in imports had been driven by the booming demand for mobile handsets starting from 1994 when GSM was introduced. On the other hand, the local telecommunications sector, because it was oriented to the needs of PTT/ Turk Telekom, long lagged behind other sectors in exports. As Turk Telekom reduced its purchases in the 1990s, manufacturers were driven to find new markets, continuously increasing their exports.

<b>ICT FOREIGN TRADE, 2004-05</b>		
<b>\$ million</b>		
	<b>2004</b>	<b>2005</b>
<b>Telecommunication</b>		
- Exports	603	765
- Imports	1,911	2,340
<b>Information technology</b>		
- Exports	42	58
- Imports	1,544	2,297
<b>Total</b>		
- Exports	645	823
- Imports	3,455	4,637
- <i>Balance</i>	-2,810	-3,814

*Source*: TESID (The Turkish Electronics Industrialists Association)

### Prospects

The sector is far from being saturated. Penetration rate is 26% in fixed line telephony services, 55% in mobile telecommunications and approximately 14% in internet. Given the low penetration rates in all segments, the market is expected to continue to grow in the next decade as well, triggered by the commercialization activities.

In telecommunications, all the new entrants in 2005 including Oger Telecoms and Vodafone unveiled significant amount of investment plans for the next few years, while Turkcell reported an investment of \$350 million and Avea \$300 million in network infrastructure and systems development in 2006. This suggests that the new era will be one where quality of services and new infrastructure, rather than price-cutting, will be the main drivers on the market and players will continue to report strong profits attributable to new technology and value added services. *“What I see is a focus on call centers and customer care, so as to make the life of customers easier,”* says Cuneyt Turkkan, general manager of Avea. *“I do not expect harsh competition in the pricing but in single-point service solutions and fixed mobile convergence, to name a few examples.”*

The representatives of the IT market foresee a 25% growth in 2006 and 07 and gradually decreasing growth rates from 13% in 2009 to 4% in 2015.

The ICT sector offers opportunities for exporters and new entrants. Important factors will include the following:

- With the end of the monopoly of Turk Telekom in voice communication and infrastructure in January 2004, local and international investors have been developing plans for value added services.
- Among the issues on the 2006 agenda will be awarding of 3G licenses, numerical carriage and entry of 4 MVNO operators. It is expected that full liberalization and effective regulation of the market will attract many other foreign investments into the sector as operators, subcontractors or service providers and equity suppliers.
- Mobile telephony market still remains in a growth phase, to be driven particularly by the pre-paid segment, young population and the limited fixed line infrastructure.
- The GSM cellular companies have obtained and continue to obtain licenses in other countries in the region, comprising important contacts for international companies for accessing such countries. Turkcell, for example, in an aim to become a regional player, has established partnerships in Ukraine, Azerbaijan, Kazakhstan, Georgia and Moldova.

- E-Transformation Turkey in 2003 and e-government projects <sup>1</sup> , which are being implemented as part of the EU convergence, will create a lucrative demand for ICT companies, paving the way for large e-Government projects with large amounts of public funding and fueling internet use and content creation.
- The enactment of the Law on Electronic Signature, which took effect in July 2004, and the draft Law on the Electronic Communications will enhance e-commerce and e-government applications. (The latter law has been in a long process of drafting and consultation by the Ministry since early 2004.)
- Government promises to support small and medium enterprises, which in turn may create demand especially for the IT products and services. There are approximately 3 million SMEs in Turkey and, an estimated 90% have no IT infrastructure. This also creates an unsaturated potential market for the IT sector.

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<sup>1</sup> Comprising 73 actions, the e-Transformation Turkey Project Short Term Action Plan was put into effect in 2003. The major component of this is the e-government, which was launched in January 2003 with MERNIS, the Central Birth Registry Processing System.

In the field of **e-government**, Turkey has instituted a number of projects designed to increase the share of the population who use Internet for public services from the 3% determined by the National Productivity Centre in 2003 closer to the 10-20% range applying in western Europe. In addition to MERNIS, other areas of e-government include land registry, pharmaceutical prescriptions, vehicle taxes, and the automation of tax offices and Ministry of Justice records. The government is encouraging foreign direct investment into the sector. It also aims for Turkey to become a service provider for outsourcing.