

# CHINA TELECOMMUNICATIONS PANORAMA

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## Abstract

*This paper gives an overview on the telecom industry in China including Hong Kong, the British ex-colony.*

*China became in 2002 the world's single largest telecom market. Understanding the complex and multifaceted internal mechanisms of the fast-changing and extremely competitive Chinese telecom scenario is essential for a foreign investor to succeed.*

*The former public monopoly has given way to an initial state-run competition: China Telecom and China Netcom in the fixed-line business, China Mobile and China Unicom in the mobile sector, as well as two minor players, China Satcom and China Railcom.*

*As a result of China's entry to the World Trade Organization (WTO) in 2001, a new regulatory regime is being established and foreign operators are gradually allowed to access the market.*

*After the last explosive-growth years, the main market trend is the stabilization of the growth rate.*

**Key words:** China, telecom market, operator, regulator

## 1. Introduction

The Chinese telecommunication sector's growth rate was about 20% between 1997 and 2002. This is the double of China's GDP (Gross Domestic Product) rate [1] and is the strongest and fastest growth in world in this line of industry [2].

China fixed-line and mobile operators have invested an average of 25 billion American dollars [1] on network infrastructure in the last years, more than all western European carriers together [3]. As a result, with 1.3 billion citizens, China owns the world's largest fixed-line and mobile network in terms of both network capacity and number of subscribers [4].

Only one out of ten Chinese citizens had a phone five years ago. Today more than one out of three have a fixed telephone subscription and more than 1.25 million cellular subscribers sign up in China every week. In five years, there will be more than 950 million fixed and mobile subscriptions, three times more than the entire population of the United States (US) [3].

China's accession to the *World Trade Organization* (WTO) on December 11<sup>th</sup> 2001 resulted in the gradual opening of the telecom services market to foreign companies. Besides, Beijing's hosting of the 2008

Olympic Games will create great business opportunities for both Chinese and foreign companies [4].

## 2. Historical Overview

Before 1994, the *Ministry of Posts and Telecommunications* (MTP) provided telecom services through its operational arm, *China Telecom*. Pressured by other ministries and dissenting customers, the Chinese government officially started the telecom industry reforms in 1994 by introducing a new competitor: *China Unicom*. However *China Unicom* could hardly compete with the giant *China Telecom* [5].

In 1998, due to a ministerial reorganization, the MTP was replaced by the new *Ministry of Information Industry* (MII). The MII took two large scale reshuffling actions targeting the inefficient state-monopoly. In 1999 the first restructuring split *China Telecom's* business into three parts (fixed-line, mobile and satellite). *China Mobile* and *China Satcom* were created to run, respectively, the mobile and satellite sectors but *China Telecom* continued to be a monopoly of fixed-line services. The second restructuring in 2002 split *China Telecom* geographically into North and South: *China Telecom - North* kept 30% of the network resources and formed *China Netcom* (CNC) and 70 % of the resources were retained by *China Telecom - South* or simply the new *China Telecom* [5].

These resources consisted of a 2.200.000 km. long [6] nation-wide optical network, based on ATM (Asynchronous Transfer Mode), SDH (Synchronous Digital Hierarchy) and DWDM (Dense Wavelength Division Multiplex) technologies, [3] and several submarine cables, in particular with the US, Japan, Germany and Russia.

Parallel to this double fission, the telecommunications division of the *Ministry of Railways* (MOR) established a new actor in 2000: *China Railcom* [1].

To sum up, in the last decade the Chinese telecom industry has changed from a state-run monopolistic structure to state-run "oligopolistic" structure.

## 3. Regulatory Environment

The MII is responsible, among other duties, for elaborating regulations, allocating resources, granting

licenses, supervising the competition, promoting Research & Development (R&D) and service quality as well as of developing tariff rates [4] [7]. The MII has built up a nation-wide regulatory system composed of *Provincial Telecommunications Administrations* (PTA) with regulatory functions within their respective provinces. A number of other significant institutions also influence China's telecom picture such as the *State Development and Reform Commission* (SDRC) [4].

Following its WTO accession, China is accelerating the establishment of a legal framework for the telecom industry. This framework includes adopting a western-style Telecommunication Law and setting up an independent regulatory and arbitration body to deal with the telecom operators [2]. None of these objectives have been yet truly accomplished:

On the one hand, Telecommunication regulations are still in an infant state. The Telecommunication Law is still expected to appear although the government promulgated the *People's Republic of China (PRC) Telecommunications Regulations* in 2000 and the *Regulations on Foreign Investment in Telecom Enterprises* (See next section) in 2001[4].

On the other hand, given the close relation between the MII and the state-owned Chinese telecom companies, the MII is far from being a truly independent telecom regulator. As an example, most senior executives of the Chinese telecom companies have links to the MII, the Government or the Party.

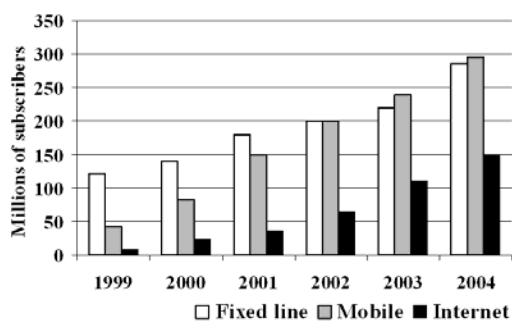


Figure 1: Number of Subscribers

#### 4. Foreign Participation

Prior to its WTO accession, China's policy protected the national emerging telecom industry [7] since it was and is a national priority sector. Only foreign equipment vendors were allowed to invest in China [2]. Authorization for the investments was conditioned on technology transfer [7]. International telecom carriers were banned from accessing the market [2].

As part of the WTO commitments, the Chinese government is opening gradually the carriers market to foreign investors. There are some geographical limits to this opening but they will be progressively relaxed. In 2005 foreign investors will be allowed for form Joint

Ventures, investing up to 50% in Internet services in the whole country, up to 49% in the mobile sector in 17 major Chinese cities and up to 25% in fixed-line basic services in Beijing, Shanghai and Canton (Guangzhou) [7]. Finding a Chinese partner to form a Joint Venture with, preferably a major carrier is mandatory for a foreign company wishing to access the Chinese market.

Foreign investments come, in order of importance, from the US, Canada, Sweden, Finland, Germany, France, Japan and South Korea [1]. Main companies from these countries already have one or more Joint Ventures. Notice that many of them result in "divorce".

#### 5. Market Overview

In the first quarter 2004, China had 285 million fixed-line subscribers (penetration rate 20 %) and 296 million mobile customers (21 %) [8] (See Fig. 1 [9]). Two comments are indispensable: On the one hand, service revenue grows much slower than the subscribers number [8]. On the other hand, China is a land of incredible contrasts. Although low average penetration rates clearly allow further growth, rates in Beijing, Shanghai, Canton or Shenzhen, are already similar to those in Western Europe or North America.

Chinese Telecom operators focus their effort on voice. Revenues from data only account 5% [6]. New technologies are being deployed to provide differential services. These technologies include ADSL (Asynchronous Digital Subscriber Line), WLAN (Wireless Local Area Networks), IP (Internet Protocol) telephony and services associated with mobile communications such as SMS / MMS (Short / Multimedia Messaging Service), ring tone download etc. Lacking the know-how in developing new services, Chinese operators are often cautious in purchasing cutting-edge technologies [1].

Mobile communication, especially GSM (Global System for Mobile) is the most profitable sub sector and reports 46% of all total revenues [1]. Concerning the Third Generation (3G), three technologies are relevant. The American system CDMA2000 (Code Division Multiplex Access) is ahead of game, the European W- CDMA (Wideband CDMA) still needs two years to mature and the home-grown TD-SCDMA (Time Division Synchronous CDMA) is behind due to equipment problems (principally handsets) [8].

Halfway between mobile and fixed, "*Xiaolingtong*" is a limited mobility service based on PAS / PHS (Personal Access System / Personal Handy Phone System) technology. It consists of a wireless local loop that provides access to the fixed-line network. With over 50 million users, PAS / PHS competes in big cities head to head with traditional mobile services since prices are typically four times cheaper [10].

## 6. Telecom Operators

Telecom operators are exclusively Chinese: two fixed-line operators with nation-wide licenses - *China Telecom* and *China Netcom* -, two mobile carriers - *China Mobile* (GSM) and *China Unicom* (GSM and CDMA)- as well as two minor players - *China Satcom* and *China Railcom* - (See Figure 2 [1]). The State has control and majority ownership of all of them. Besides, most of them are financed in Hong Kong (HK).

*China Telecom*, *Netcom*, *Mobile* have been pressuring the government for years to get 3G licenses. They are very likely to succeed but there is no time limit set [1] [10] (maybe in 2005 or 2006).

*China Telecom* operates mainly in the wealthy Southern provinces (including Shanghai and Canton) in addition to the less prosperous West. It runs domestic and international fixed-line networks and provides fixed-line voice, data, video, multimedia and information services. It compensates the lack of a mobile license by deploying PAS / PHS very successfully. A second focus point is broadband based on Ethernet and ADSL [1]. *China Telecom* is listed in HK and New York (NY) stock exchanges.

*China Netcom* operates essentially in the Northern provinces (including Beijing) but has a straightforward strategy to enter *China Telecom*'s southern territory. *China Netcom* is catching up quickly to compete against *China Telecom* because of its strength in broadband, WLAN, IP telephony [1] and, naturally, PAS / PHS. It is not yet listed.

*China Mobile* not only operates basic GSM services but also value-added services such as GPRS (General Packet Radio Service) data transfer, IP telephony and multimedia. It ranks the first in the world in terms of network scale and customers base [1]. It is listed in HK and NY stock exchanges.

*China Unicom* is to date the only licensed full telecom service provider in China [7]. Its services include fixed-line, mobile, IP telephony, data and internet. Furthermore, *China Unicom* is the third largest mobile operator in the world and the only one in China operating a CDMA network [1]. It is concentrating its efforts on CDMA and little investment is expected in GSM. It is listed in HK, NY and Shanghai stock exchanges.

*China Satcom* is licensed to engage in all kind of satellite related services such as transponder lease, domestic television broadcasting, public VSAT (Very Small Antenna Aperture) communications, video conference, data broadcasting, IP telephony and satellite based high-speed Internet access [1].

*China Railcom* grows at a slow pace [1] due to its lack of expertise in daily business operation in addition to the lack of funds to upgrade its existing private network so as to provide services to the general public.

## 7. Network Equipment Suppliers

The leading international suppliers of network equipment - Alcatel, Cisco, Lucent, *Nortel* and *Siemens* - as well as the major international suppliers of portable phone sets - Ericsson, Motorola, *Nokia*, *Samsung*, and also *Siemens* - are well known in China.

A large number of Chinese companies have developed under the government's protection [2] and compete now with foreign corporations not only in the Chinese market but also in third-countries. *Datang* is the main TD-SCDMA manufacturer, *UTStarcom*, the main PAS / PHS manufacturer, *Huawei* leads the SMS market and *Great Wall* stands out in the broadband sector. Other recognized Chinese equipment suppliers are *Shanghai Bell* and *Zhongxing Telecommunications Equipment (ZTE)*. Furthermore, *Amoi*, *Konka*, *Ningbo Bird* and *Keijan* are the most representative Chinese mobile phone manufactures [1] [7] [10].

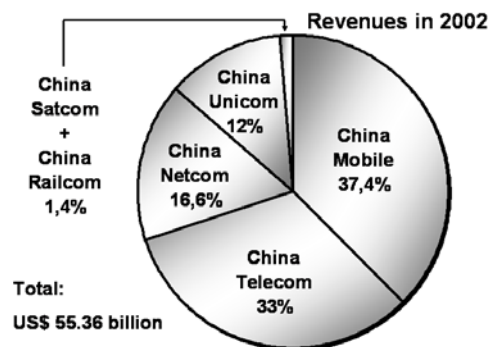


Figure 2. Revenue reached in 2002

## 8. Telecommunications in Hong Kong (HK)

The former British colony has one of the most mature, sophisticated and competitive telecom markets in the world. As a result, HK customers get world class services in terms of capacity, speed and price. This has been a decisive factor in HK's development as a world leading business and financial centre [11].

The *Office of Telecommunications Authority (OFTA)* is the legislative body responsible for regulating the telecommunications industry in HK [11]. The HK government, through the OFTA, has fully liberalized all telecom sectors and there are no foreign ownership restrictions.

In the local fixed-line market there is neither pre-set limit on the number of licenses issued nor deadline for applications. In 2004, there are nine fixed-line licenses: *PCCW-HKT*, *New World Telephone Ltd.*, *Wharf T&T Ltd.*, *Hutchinson Global Crossing Ltd.*, *HK Broadband Network Ltd.*, *Eastar Technology Ltd.*, *CM Tel. (HK) Ltd.*, *TraxComm Ltd.* and *HKC Network Ltd.* [12]. Consequently, the telephone density is, with 56 lines per 100 people, among the highest in the world [11].

In 2004 there are 197 licensed Internet Service Providers (ISP) in HK, providing dial-up or broadband services. HK is second after South Korea in terms of broadband penetration rate (53%).

With regard to mobile services, the OFTA awarded four 3G licenses in 2001: *HK CSL Ltd.*, *Hutchinson 3G (HK) Ltd.*, *SmartTone 3G Ltd.* and *Sunday 3G (HK) Ltd.* The first 3G mobile services were launched in January 2004 [11]. Moreover, these four 3G operators, together with *New World Mobility* and *Peoples Telephone Co. Ltd.* operate a total of eleven GSM networks. Thus, the mobile density in 2004 is, once again, one of the highest in the world (106.3 %) [11].

HK continues to be a main entrance to the Chinese market for European and American investors. In fact, Western agents in HK are increasingly important to export networking equipment to China [12].

## 9. Sector Trends

China's telecom sector is facing a transition from a period of explosive growth to a period of mature growth [5]. The growth rates, which peaked in 1999 for broadband Internet users (350%), in 2000 for mobile users (90%) and in 2001 for fixed-line subscribers (30%), have stabilized (respectively about 40%, 20%, 10% in 2004) [5] [9]. As many of China citizens are still poor or live in remote areas [13], recruiting new customers is getting more difficult.

China's Capital Expenditure (CAPEX) boom is also over [13]. Chinese Carriers shift focus from network construction towards generating revenue through new and better services [5]. Anyway a slight CAPEX rebound is expected when the new 3G licenses are issued.

Nevertheless there is no reason to panic about this decline. China still has a great potential for further development and promises tremendous opportunities for western companies. But given the transition to more stable growth, it is extremely important for these companies to have an objective perspective of the market and to understand which market segments promise the best growth opportunities [2].

Particularly, best sales prospects for foreign companies in the near future are in the following sub sectors: broadband (WLAN and ADSL), Internet value-added capabilities (e-government, e-banking, e-commerce), mobile and 3G [1].

Broadband is the fastest growing segment. Its future will be determined by pricing, improved services and contents catering for young internet users [6]. Major barriers are the government's continuing regulation of content [14] and the legal void.

Regarding 3G, services are expected to have a slow take-off period instead of an explosive one [1]. From today's perspective, it seems that *China Unicom* will

go on CDMA2000, that *China Mobile* will use W-CDMA and that *China Telecom* and *Netcom* will deploy TD-SCDMA, at least in some points of their networks [13].

## 10. Conclusions

Despite the "telecom miracle", Chinese customers still pay relatively high prices for products and services well below the quality they expect.

This extremely competitive market is characterized by a multitude of complex, multi-layered, political, economic and cultural factors that must be carefully evaluated in order to be successful [7].

Another key aspect for a foreign investor in China is to master the ancient Chinese art of "*Guanxi*" (*network of contacts*) [15] especially as long as the MII continues to be both judge and party in the telecom business, rather than an impartial regulator.

China's telecom scenario in the next years is difficult to decipher. The MII may remodel the present situation by introducing new players, reorganizing the existing ones or assigning 3G licenses. Whether China will continue to be "*El Dorado*" for the telecom industry is still a very difficult question to answer. Future is murky. It was always like that [15].

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