

**Best Export Markets
For
U.S. Telecommunications Equipment and Services, 2008**

Best Export Markets for U.S Telecommunications Equipment and Services was compiled by Duangporn Charoentaweemongkol, under the supervision of Maurice Kogon, Director of the El Camino College Center for International Trade Development (CITD) in Hawthorne, California. The report is based largely on 2008 Country Commercial Guides (CCGs) prepared by United States Commercial Service (USCS) posts abroad. All CCGs include a standard chapter “Leading Sectors for U.S. Exports.” This report drew from those CCGs which specifically recommended Telecommunications Equipment and Services as a best prospect for U.S. exports.

The entire report is also available as a Word document, in print or electronically, for \$25.00. To order, contact the El Camino College CITD at: 310-973-3173 or **mkogon@elcamino.edu**.

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I. Export Market Brief

A. HS 8517: Telephone sets, including telephones for cellular networks or for other wireless networks; other apparatus for the transmission or reception of voice, images or other data, including apparatus for communication in a wired or wireless network (such as a local or wide area network)

This Export Market Brief, based on the latest available trade statistics and market research, provides an overview of the world market for U.S. telecommunications equipment falling within the HS 8517 category, one of two sub-sectors of Telecommunications Equipment covered in this Best Market Report.

Export growth: U.S. exports of products in the HS 8517 category rose from \$9.3 billion in 2004 to \$18.4 billion in 2007, an increase of 96.7% over the four-year period.

Leading Export Markets: The leading markets for U.S. exports of products in the HS 8517 category in 2007 (all above \$2.1 billion) were: Mexico (12.7% of total), Canada (12.4%), and the Netherlands (11.5%). Other significant markets (above \$500 million) were: United Kingdom (5%), China (4.9%), Hong-Kong (4.9%), Japan (4.4%), Germany (3.7%), and Korea (2.8%).

Fastest Growing Export Markets: The leading markets with both high and sustained growth rates for U.S. exports of HS 8517 products over the latest four years (2004-07 and continuing in 2006-07) were: Mexico, Hong Kong, Germany, Brazil, India, Canada, the Netherlands, China, Korea and the UK.

Leading Importing Countries: The top foreign importers of products in the HS 8517 category in 2007 (all above \$14 billion) were Hong Kong (\$22.1 billion or 8.7% of total), China (7.4%), the Netherlands (6.2%), Germany (5.7%), the UK (5.6%). Other significant importers (all above \$6 billion) were Singapore (3.8%), and Japan (3.6%), France (3%), UK (3.8%), Russia (2.7%), and Italy (2.4%).

World Market Size & U.S. Share: Total world exports of HS 8517 products by all countries reached \$261.6 billion in 2007. The U.S. had a 7% share of the total world market in 2007, topped only by China (30.1%), Korea (11%), and Hong Kong (8.7%). Other world suppliers with significant market shares were Germany (6.3%) the Netherlands' (5.2%), and Finland (4.6%).

Best Market Prospects: The markets listed below appear to be particularly promising for U.S. exports of the overall Telecommunications Equipment category over the next two years:

Albania	Finland	Libya	Portugal	Taiwan
Argentina	France	Luxembourg	Qatar	Tanzania
Austria	Georgia	Malaysia	Romania	Tunisia
Canada	Germany	Mexico	Russia	Turkey
Columbia	Ghana	Montenegro	Saudi Arabia	Ukraine
Cote d'Ivoire	Greece	Nepal	Senegal	United
Croatia	Guyana	Nicaragua	Singapore	Kingdom
Czech Rep	Haiti	Niger	South Africa	Uruguay
Denmark	Honduras	Nigeria	South Korea	Venezuela
Djibouti	Indonesia	Norway	Spain	Vietnam
Dominican Rep	Israel	Panama	Sri Lanka	Yemen
Ecuador	Italy	Paraguay	Swaziland	Bosnia and Herzegovina
Egypt	Kazakhstan	Peru	Sweden	Serbia and Montenegro
Ethiopia	Latvia	Philippines	Switzerland	

I. Export Market Brief

B. HS 903040: Instruments & apparatus specially designed for telecommunications (e.g., cross-talk meters, gain measuring instr., distortion factor meters, psophometers)

This Market Brief, based on the latest available trade statistics and market research, provides an overview of the world market for U.S. telecommunications equipment falling within the HS 903040 category, one of two sub-sectors of Telecommunications Equipment covered in this Best Market Report.

Export growth: U.S exports of products in the HS 903040 category rose from \$979.8 million in 2004 to \$1.3 billion in 2007, an increase of 35% over the four-year period.

Leading Export Market: The leading markets for U.S exports of products in the HS 903040 category in 2007 (all above \$70 million) were: Canada (7.8% of total), Germany (6.7%), Japan (6.7%), Israel (6.3%), Hong-Kong (6.1%), China (5.7%), U.K (5.6%) and Malaysia (5.6%). Other significant markets (above \$30 million) were: India (4.4%), France (3.8%), Korea (3.2%), Columbia (2.7%), Netherlands (2.6%), and Mexico (2.5%).

Fastest Growing Export Markets: The leading markets with both high and sustained growth rates for U.S. exports of HS 903040 products over the latest four years (2004-07 and continuing in 2006-07) were: Hong Kong, China, Malaysia and India. Other significant growth markets over the 2004-07 periods were Colombia, the Netherlands, and Brazil.

Leading Importing Countries: The top foreign importers of HS 903040 products in 2007 (all above \$100 million) were China (\$450.9 million, or 16% of total), Hong Kong (9%), the UK (6%), Canada (5%), and Korea (4%). Other significant importers (all above \$50 million) were Germany (3%), Japan (3%), and France (3%) Singapore (2%), and Italy (2%).

World Market Size & U.S. Share: Total world exports of HS 903040 products by all countries reached \$3.1 billion in 2007. The U.S topped all world suppliers with a 42.5% share of the total world market in 2007. Other world suppliers with significant market shares were Germany (18.2%), the UK (9.8%), Hong Kong (7.5%), Canada (3.5%) and France (2.2%).

Best Market Prospects: The markets listed below appear to be particularly promising for U.S. exports of the overall Telecommunications Equipment category over the next two years:

Albania	Finland	Libya	Portugal	Taiwan
Argentina	France	Luxembourg	Qatar	Tanzania
Austria	Georgia	Malaysia	Romania	Tunisia
Canada	Germany	Mexico	Russia	Turkey
Columbia	Ghana	Montenegro	Saudi Arabia	Ukraine
Cote d'Ivoire	Greece	Nepal	Senegal	United
Croatia	Guyana	Nicaragua	Singapore	Kingdom
Czech Rep	Haiti	Niger	South Africa	Uruguay
Denmark	Honduras	Nigeria	South Korea	Venezuela
Djibouti	Indonesia	Norway	Spain	Vietnam
Dominican Rep	Israel	Panama	Sri Lanka	Yemen
Ecuador	Italy	Paraguay	Swaziland	Bosnia and Herzegovina
Egypt	Kazakhstan	Peru	Sweden	Serbia and Montenegro
Ethiopia	Latvia	Philippines	Switzerland	

II. Market Potential Indicators

A. Top 30 U.S. Export Markets for U.S. Telecommunication Equipment & Services by Country. These tables show the leading and fastest growing markets for two categories of U.S. Telecommunication Equipment & Services over the past four years (2004-2007). Source: U.S. Census Bureau.

1. **HS 8517:** Telephone sets, including telephones for cellular networks or for other wireless networks; other apparatus for the transmission or reception of voice, images or other data, including apparatus for communication in a wired or wireless network (such as a local or wide area network)
2. **HS 903040:** Instruments & apparatus specially designed for telecommunications (e.g., cross-talk meters, gain measuring instr., distortion factor meters, psophometers)

B. Top 30 World Importers of U.S. Telecommunication Equipment & Services by Country. These tables show the leading and fastest growing world importers of U.S. Telecommunication Equipment & Services in 2007. Source: UN COMTRADE.

1. **HS 8517:** Telephone sets, including telephones for cellular networks or for other wireless networks; other apparatus for the transmission or reception of voice, images or other data, including apparatus for communication in a wired or wireless network (such as a local or wide area network)
2. **HS 903040:** Instruments & apparatus specially designed for telecommunications (e.g., cross-talk meters, gain measuring instr., distortion factor meters, psophometers)

C. Top 30 World Exporters of U.S. Telecommunication Equipment & Services by Country. This table shows the U.S. and competitor-country shares of total world exports of U.S. Telecommunication Equipment & Services in 2007. Source: UN COMTRADE.

1. **HS 8517:** Telephone sets, including telephones for cellular networks or for other wireless networks; other apparatus for the transmission or reception of voice, images or other data, including apparatus for communication in a wired or wireless network (such as a local or wide area network)
2. **HS 903040:** Instruments & apparatus specially designed for telecommunications (e.g., cross-talk meters, gain measuring instr., distortion factor meters, psophometers)

D. Market Sizes & U.S. Share: U.S. Telecommunication Equipment & Services by Country. This table shows each “best prospect” country’s total market, total imports, imports from the U.S., and the U.S. market share for products in this sector. Source: U.S. Commercial Staff in each country.

II. Market Potential Indicators
II.A. Top 30 U.S Exports Markets 2004-2007

**1. 8517: Telephone sets, including telephones for cellular networks or for other wireless networks;
other apparatus for the transmission or reception of voice, images or other data, including apparatus
for communication in a wired or wireless network (such as a local or wide area network)**

Country	2004	2005	2006	2007	% Change	% Change	% Share
	<i>In 1,000 Dollars</i>				2004-07	2006-07	2007
Mexico	676,620	758,782	888,108	2,336,553	245.3%	163.1%	12.7%
Canada	1,223,841	1,207,435	1,363,483	2,276,069	86.0%	66.9%	12.4%
Netherlands	1,423,026	1,858,086	1,725,063	2,111,722	48.4%	22.4%	11.5%
United Kingdom	811,122	698,116	793,969	909,323	12.1%	14.5%	5.0%
China	527,766	568,801	677,313	900,579	70.6%	33.0%	4.9%
Hong Kong	298,060	272,650	354,623	899,348	201.7%	153.6%	4.9%
Japan	856,398	784,918	604,737	801,632	-6.4%	32.6%	4.4%
Germany	264,964	323,091	434,314	681,501	157.2%	56.9%	3.7%
Korea	306,929	316,851	334,130	522,672	70.3%	56.4%	2.8%
Brazil	208,991	169,893	174,550	428,647	105.1%	145.6%	2.3%
India	199,817	208,811	267,129	396,181	98.3%	48.3%	2.2%
Singapore	208,832	236,659	260,888	393,302	88.3%	50.8%	2.1%
Australia	283,609	344,224	324,476	383,980	35.4%	18.3%	2.1%
Taiwan	261,354	178,208	189,091	317,869	21.6%	68.1%	1.7%
France	88,723	103,820	140,029	279,940	215.5%	99.9%	1.5%
Belgium	75,938	148,069	122,027	273,417	260.1%	124.1%	1.5%
Venezuela	104,265	94,656	95,504	252,353	142.0%	164.2%	1.4%
Ecuador	18,690	17,536	19,707	229,811	1129.6%	1066.1%	1.3%
Malaysia	112,825	107,968	133,141	228,694	102.7%	71.8%	1.2%
Argentina	60,244	82,868	98,297	179,241	197.5%	82.3%	1.0%
United Arab Em	44,884	54,283	88,636	173,655	286.9%	95.9%	0.9%
Italy	73,552	82,301	94,534	172,790	134.9%	82.8%	0.9%
Colombia	34,162	43,908	61,846	163,819	379.5%	164.9%	0.9%
Sweden	35,622	70,930	123,780	149,831	320.6%	21.0%	0.8%
Thailand	65,075	131,282	152,503	149,589	129.9%	-1.9%	0.8%
Chile	45,448	63,943	103,650	141,637	211.6%	36.6%	0.8%
Peru	18,358	25,597	31,939	131,614	616.9%	312.1%	0.7%
Ireland	109,729	94,859	51,207	126,395	15.2%	146.8%	0.7%
South Africa	57,050	74,403	108,729	125,363	119.7%	15.3%	0.7%
Israel	62,322	97,410	79,517	110,355	77.1%	38.8%	0.6%
Subtotal :	8,558,217	9,220,359	9,896,922	16,247,883	89.9%	64.2%	88.5%
All Other:	772,003	1,013,563	1,137,240	2,106,016	172.8%	85.2%	
Total	9,330,220	10,233,922	11,034,162	18,353,899	96.7%	66.3%	

Source: US Census Bureau

II. Market Potential Indicators
II.A. Top 30 U.S Exports Markets 2004-2007

2. HS 903040: Instruments & apparatus specially designed for telecommunications (e.g., cross-talk meters, gain measuring instr., distortion factor meters, psophometers)

Country	2004	2005	2006	2007	% Change	% Change	% Share
	<i>In 1,000 Dollars</i>				2004 - 2007	2006 - 2007	2007
Canada	112,965	110,176	92,607	102,318	-9.43%	10.49%	7.7%
Germany	55,606	86,703	98,571	89,159	60.34%	-9.55%	6.7%
Japan	97,115	107,547	108,810	88,377	-9.00%	-18.78%	6.7%
Israel	45,724	79,666	97,173	83,827	83.33%	-13.73%	6.3%
Hong Kong	58,971	64,700	65,457	80,515	36.53%	23.00%	6.1%
China	68,017	50,594	57,716	76,001	11.74%	31.68%	5.7%
United Kingdom	85,973	74,886	57,772	73,910	-14.03%	27.93%	5.6%
Malaysia	18,616	31,671	62,005	73,524	294.95%	18.58%	5.6%
India	22,104	32,922	44,120	57,854	161.74%	31.13%	4.4%
France	36,349	63,613	52,175	49,911	37.31%	-4.34%	3.8%
Korea	46,432	66,123	34,713	42,490	-8.49%	22.40%	3.2%
Colombia	3,920	14,957	24,153	36,181	822.98%	49.80%	2.7%
Netherlands	25,717	35,554	25,098	34,162	32.84%	36.11%	2.6%
Mexico	39,724	37,196	33,475	32,449	-18.31%	-3.06%	2.5%
Brazil	21,766	22,085	15,282	28,977	33.13%	89.62%	2.2%
Taiwan	27,126	21,826	28,863	28,890	6.50%	0.09%	2.2%
Singapore	25,213	31,542	19,754	23,672	-6.11%	19.83%	1.8%
Italy	15,813	20,052	20,067	21,641	36.86%	7.84%	1.6%
Australia	16,425	21,846	32,724	19,630	19.51%	-40.01%	1.5%
Costa Rica	1,957	7,117	41,226	16,660	751.30%	-59.59%	1.3%
Venezuela	6,679	10,898	8,719	16,350	144.80%	87.52%	1.2%
Sweden	8,731	10,033	10,535	14,513	66.22%	37.76%	1.1%
Austria	6,390	10,326	10,391	14,231	122.71%	36.96%	1.1%
Thailand	4,210	12,794	7,893	11,520	173.63%	45.95%	0.9%
Finland	4,919	5,734	7,276	11,055	124.74%	51.94%	0.8%
Switzerland	5,688	8,779	8,081	11,044	94.16%	36.67%	0.8%
Dominican Rep	5,087	8,436	12,524	10,239	101.28%	-18.24%	0.8%
Spain	11,923	11,026	10,751	10,147	-14.90%	-5.62%	0.8%
Belgium	4,495	8,444	7,876	8,196	82.34%	4.06%	0.6%
United Arab Em	5,880	5,970	3,990	6,809	15.80%	70.65%	0.5%
Subtotal :	889,534	1,073,217	1,099,796	1,174,253	32.01%	6.77%	88.8%
All Other:	90,241	108,410	145,410	148,293	64.33%	1.98%	11.2%
Total	979,775	1,181,626	1,245,205	1,322,547	34.98%	6.21%	100.0%

Source: US Census Bureau

II. Market Potential Indicators
II. B Top 30 World Importers, 2007

1. HS 8517: Telephone sets, including telephones for cellular networks or for other wireless networks; other apparatus for the transmission or reception of voice, images or other data, including apparatus for communication in a wired or wireless network

Importing Countries	2007	% Share
USA	\$53,140,625,834	20.9%
China, Hong Kong SAR	\$22,073,277,853	8.7%
China	\$18,804,119,426	7.4%
Netherlands	\$15,704,380,829	6.2%
Germany	\$14,413,729,000	5.7%
United Kingdom	\$14,127,873,218	5.6%
Singapore	\$9,618,044,302	3.8%
Japan	\$9,103,187,157	3.6%
France	\$7,719,578,635	3.0%
Russian Federation	\$6,812,979,100	2.7%
Italy	\$6,219,194,733	2.4%
Spain	\$5,819,171,111	2.3%
Canada	\$5,179,902,996	2.0%
Hungary	\$4,482,833,000	1.8%
Rep. of Korea	\$4,377,317,282	1.7%
Finland	\$4,342,720,555	1.7%
Sweden	\$4,037,380,664	1.6%
Australia	\$3,736,998,483	1.5%
Brazil	\$3,031,147,212	1.2%
Poland	\$2,880,279,643	1.1%
Saudi Arabia	\$2,674,453,928	1.1%
Belgium	\$2,608,208,918	1.0%
South Africa	\$2,490,423,533	1.0%
Austria	\$2,277,913,917	0.9%
Switzerland	\$2,072,225,814	0.8%
Argentina	\$1,976,760,362	0.8%
Denmark	\$1,698,570,480	0.7%
Czech Rep.	\$1,689,138,604	0.7%
Thailand	\$1,565,624,199	0.6%
Colombia	\$1,471,259,827	0.6%
Top 30 Subtotal	\$236,149,320,615	92.9%
Other	\$17,916,735,006	7.1%
World Total	\$254,066,055,621	100.0%

Source: UN Comtrade

II. Market Potential Indicators
II. B Top 30 World Importers, 2007

2. HS 903040: Instruments & apparatus specially designed for telecommunications (e.g., cross-talk meters, gain measuring instr., distortion factor meters, psophometers)

Importing Countries	\$2,007	% Share
USA	\$774,911,122	27%
China	\$450,940,816	16%
China, Hong Kong SAR	\$269,226,362	9%
United Kingdom	\$158,745,670	6%
Canada	\$149,596,500	5%
Rep. of Korea	\$121,348,947	4%
Germany	\$99,513,000	3%
Japan	\$94,368,772	3%
France	\$87,366,720	3%
Singapore	\$66,215,288	2%
Italy	\$54,687,423	2%
Netherlands	\$47,048,708	2%
Spain	\$42,144,647	1%
Australia	\$39,337,255	1%
Brazil	\$38,005,022	1%
Israel	\$36,556,000	1%
Sweden	\$34,276,901	1%
Finland	\$31,454,811	1%
Denmark	\$26,840,564	1%
Belgium	\$19,586,621	1%
Austria	\$18,486,638	1%
Switzerland	\$17,887,229	1%
Poland	\$13,222,544	0%
Russian Federation	\$12,855,057	0%
Greece	\$12,720,405	0%
Norway	\$12,566,604	0%
South Africa	\$11,936,380	0%
Saudi Arabia	\$11,825,212	0%
Romania	\$10,646,482	0%
Ireland	\$10,197,944	0%
Top 30 Subtotal	\$2,863,489,923	100%
Other	\$10,197,944	0%
World Total	\$2,873,687,867	100%

II. Market Potential Indicators
II. C Top 30 World Exporters & U.S Market Share, 2007

1. HS 8517: Telephone sets, including telephones for cellular networks or for other wireless networks; other apparatus for the transmission or reception of voice, images or other data, including apparatus for communication in a wired or wireless network

Exporting Countries	2007	% Share
China	\$78,740,880,219	30.1%
Rep. of Korea	\$28,850,494,677	11.0%
China, Hong Kong SAR	\$22,880,414,117	8.7%
USA	\$18,353,898,986	7.0%
Germany	\$16,514,994,000	6.3%
Netherlands	\$13,606,634,476	5.2%
Finland	\$12,012,077,990	4.6%
Singapore	\$9,960,100,540	3.8%
Hungary	\$9,550,536,000	3.7%
Sweden	\$8,700,370,065	3.3%
Japan	\$6,975,743,389	2.7%
Canada	\$5,464,867,268	2.1%
France	\$5,069,099,330	1.9%
United Kingdom	\$4,822,671,380	1.8%
Italy	\$3,352,745,286	1.3%
Brazil	\$2,206,498,976	0.8%
Austria	\$2,053,758,036	0.8%
Czech Rep.	\$1,801,404,657	0.7%
Belgium	\$1,719,688,416	0.7%
Ireland	\$1,152,239,026	0.4%
Thailand	\$1,136,334,605	0.4%
Denmark	\$1,061,573,790	0.4%
Poland	\$765,224,786	0.3%
Spain	\$582,448,122	0.2%
Norway	\$569,513,855	0.2%
Switzerland	\$545,588,491	0.2%
Estonia	\$488,434,174	0.2%
Australia	\$354,809,821	0.1%
Jordan	\$329,326,273	0.1%
Greece	\$263,829,033	0.1%
Top 30 Subtotal	\$259,886,199,784	99.34%
Other	\$1,735,134,819	0.66%
World Total	\$261,621,334,603	100.0%

Source: UN Comtrade

II. Market Potential Indicators
II. C Top 30 World Exporters & U.S Market Share, 2007

2. HS 903040: Instruments & apparatus specially designed for telecommunications (e.g., cross-talk meters, gain measuring instr., distortion factor meters, psophometers)

Exporting Countries	2007	% Share
USA	\$1,322,546,792	42.5%
Germany	\$566,284,000	18.2%
United Kingdom	\$304,299,123	9.8%
China, Hong Kong SAR	\$231,935,938	7.5%
Canada	\$109,759,595	3.5%
France	\$69,597,933	2.2%
Singapore	\$62,497,967	2.0%
Finland	\$54,403,973	1.7%
Sweden	\$50,853,112	1.6%
Switzerland	\$48,132,133	1.5%
Japan	\$43,546,309	1.4%
Spain	\$36,060,344	1.2%
Italy	\$26,425,372	0.8%
Rep. of Korea	\$25,205,151	0.8%
Hungary	\$22,817,000	0.7%
China	\$18,120,614	0.6%
Denmark	\$16,340,313	0.5%
Belgium	\$15,457,540	0.5%
Austria	\$13,802,178	0.4%
Australia	\$11,904,629	0.4%
Brazil	\$11,863,828	0.4%
Netherlands	\$8,765,488	0.3%
Poland	\$5,397,928	0.2%
Ireland	\$4,100,563	0.1%
Czech Rep.	\$4,052,352	0.1%
Saudi Arabia	\$3,436,839	0.1%
Israel	\$2,903,000	0.1%
New Zealand	\$2,661,160	0.1%
South Africa	\$2,396,522	0.1%
Estonia	\$2,279,727	0.1%
Top 30 Subtotal	\$3,097,847,423	99.6%
Other	\$13,491,595	0.4%
World Total	\$3,111,339,018	100.0%

II. Market Potential Indicators

II D. Market Sizes & U.S. Share, by Country

The Table below provides comparative data on total market, import market, and import from the U.S. for 68 countries considered “best prospects” for U.S. exports of Telecommunications Equipment and Services. The countries are listed in alphabetic order, not in rank order. The data are based on local sources and reflect best estimates of USCS commercial officers each country. Statistical accuracy and comparability to other sources (e.g., “USDOC Bureau of Census”) are affected by a number of factors, including lack of published figures in certain markets, variances in data collection techniques, sources of data, and industry definitions.

Market Sizes for Telecommunications Equipment and Services, by Country
(Values in \$ Millions)

Country	Total Market			Total Import			Imports from US			% U.S. Share
	2005	2007	% Change	2005	2007	% Change	2005	2007	% Change	2008
Argentina	1,669	2,190	31.2%	1,630	1,956	20.0%	72	66	-8.3%	3.37%
Austria***	1,512	1,588	5.0%	510	535	5.0%	47	50	5.1%	9.30%
Canada***	11,170	11,225	0.5%	5,570	5,793	4.0%	1,317	1,330	1.0%	22.96%
Columbia	307	1,192	287.8%	282	1,292	357.5%	60	103	72.9%	7.99%
Croatia**	750	900	20.0%	330	356	7.9%	8	5	-37.5%	1.40%
Czech Republic	2,980	4,610	54.7%	2,990	3,910	30.8%	870	1,110	27.6%	28.39%
Dominican Republic	140	169	20.4%	139	166	19.8%	90	108	19.9%	65.06%
Egypt***	4,320	4,925	14.0%	3,456	3,975	15.0%	1,728	1,988	15.0%	50.01%
France***	15,160	16,100	6.2%	9,435	9,770	3.6%	1,465	1,510	3.1%	15.46%
Georgia*	45	67	46.7%	46	67	44.3%	3	6	125.9%	9.13%
Germany***	20,400	20,900	2.5%	12,000	12,300	2.5%	2,000	2,100	5.0%	17.07%
Ghana	223	43	-80.8%	223	43	-80.8%	17	3	-81.2%	7.46%
Greece	6,300	7,030	11.6%	3,500	4,150	18.6%	500	567	13.4%	13.66%
Haiti***	85	90	5.9%	N/A	N/A	N/A	60	64	6.7%	N/A
Honduras	175	280	60.0%	N/A	N/A	N/A	153	256	67.3%	N/A
Indonesia**	3,565	3,920	10.0%	3,084	3,512	13.9%	1,387	1,525	9.9%	43.42%
Israel	1,620	1,750	8.0%	1,250	1,351	8.1%	315	333	5.7%	24.65%
Italy	41,834	50,530	20.8%	2,829	4,043	42.9%	525	850	61.9%	21.02%
Kazakhstan***	475	570	20.0%	468	565	20.7%	73	105	43.4%	18.58%
Malaysia	1,485	2,000	34.7%	12,812	14,500	13.2%	N/A	N/A	N/A	N/A
Mexico	7,217	9,216	27.7%	4,752	6,068	27.7%	2,858	3,649	27.7%	60.14%
Nepal***	65	42	-35.4%	N/A	N/A	N/A	0	1	401.6%	N/A
Nicaragua**	1	2	88.9%	117	128	9.5%	12	7	-42.7%	5.55%
Niger**	N/A	N/A	N/A	3	5	47.1%	1	2	97.8%	34.77%
Nigeria***	10,000	13,000	30.0%	10,000	13,000	30.0%	3,900	5,200	33.3%	40.00%
Norway**	9,700	8,100	-16.5%	1,150	868	-24.5%	N/A	N/A	N/A	N/A

*2004-2005 **2005-2006 ***2006-2007

Market Sizes for Telecommunications Equipment and Services, by Country
(Values in \$ Millions)

Country	Total Market			Total Import			Imports from US			% U.S. Share
	2005	2007	% Change	2005	2007	% Change	2005	2007	% Change	2008
Panama***	493	552	12.0%	493	552	12.0%	199	223	12.0%	40.37%
Peru	839	1,629	94.0%	892	1,672	87.5%	369	750	103.4%	44.85%
Philippines	1,210	1,330	9.9%	1,210	1,330	9.9%	76	84	10.0%	6.29%
Portugal	4,044	4,284	5.9%	2,446	2,546	4.1%	333	315	-5.4%	12.37%
Qatar*	91	100	10.0%	91	100	10.0%	10	15	47.1%	14.96%
Romania***	4,054	4,945	22.0%	3,324	3,956	19.0%	366	435	19.0%	11.00%
Russia	23,900	36,000	50.6%	4,090	4,992	22.1%	54	66	22.2%	1.32%
Singapore***	4,800	3,440	-28.3%	13,200	13,400	1.5%	504	560	11.1%	4.18%
South Africa	13,000	17,100	31.5%	6,600	9,100	37.9%	3,800	5,100	34.2%	56.04%
Spain	6,716	8,017	19.4%	5,245	6,089	16.1%	1,331	1,379	3.6%	22.65%
Sweden	1,530	1,622	6.0%	1,754	2,148	22.5%	81	118	45.7%	5.49%
Taiwan	4,574	4,465	-2.4%	3,960	3,755	-5.2%	277	281	1.4%	7.48%
Turkey***	15,700	18,000	14.6%	6,400	7,200	12.5%	350	500	42.9%	6.94%
United Kingdom	11,530	12,200	5.8%	6,890	5,200	-24.5%	1,010	850	-15.8%	16.35%
Uruguay	N/A	N/A	N/A	156	207	32.6%	30	27	-8.1%	13.08%
Venezuela	1,365	1,428	4.6%	1,365	1,428	4.6%	521	511	-1.9%	35.78%
Vietnam***	1,650	2,060	24.8%	1,085	1,350	24.4%	135	170	25.9%	12.59%

*2004-2005 **2005-2006 ***2006-2007

III. Best-Prospect Market Assessments

Following are overviews of “best prospect” markets for Telecommunications Equipment and Services, based on observations of USCS posts in each country. The countries appear in alphabetical order. For more detailed market research on Telecommunications Equipment and Services in these and other specific markets, see relevant Market Research Reports listed in Chapter V. For general commercial and economic information on individual countries, see the relevant Country Commercial Guides (CCGs).

Albania

Overview

The IT market in Albania is expected to expand at a high annual growth rate of 17.8% over the next five-years. The projections for the market in 2011 reach \$100 million. There are many small local companies operating in this sector as well as a local landline and two cellular operators. The third mobile operator is expected to start operations in March 2008. The telecommunications market is generally liberalized.

Best Prospects/Services

- **Voice Telephony:** The number of fixed lines in use has increased from 87,000 lines in 1997 to approximately 242,184 lines in 2005. This represents eight telephones per 100 inhabitants, still one of the lowest densities in Europe. The main player in this market segment is the former state-owned Albtelecom. 76% of its shares were privatized by the consortium of Calic Enerjii and Turkish Telecom in June 2007. The company is underdeveloped and privatization is expected to boost its performance.
- **Mobile Telephony:** Mobile services are another area that experienced fast growth during the last eight years. In 1996, only 2,300 subscribers had mobile service while by the end of 2007 the market has almost 2 million customers. Currently, two main operators dominate the market. The first is Albanian Mobile Communication (AMC), a state-owned company that was sold in 1999 to a joint-venture partnership between COSMOTE (Greece) and TELENOR (Norway). The second license was granted in 2001 to a consortium composed of Vodafone (UK) and Panafon (Greece). A third mobile license was granted in March 2004 to Albtelecom, and is expected to become operational by March 2008. Initially, Eagle Mobile will cover only a part of the country before expanding later. The GOA has also made public its intention to grant a fourth license in order to further increase competition. Mobile service tariffs are high and the current two operators share a market of 2 million customers with a total turnover that reached \$450 million in 2006.
- **Rural Telecommunication:** The market for rural telecommunication was liberalized in 2000. As of 2006, there were 52 licensed rural operators and 47 of them had an interconnection agreement with Albtelecom. The total number of their subscribers is 25,000. However, this market has not grown much due to competition from the mobile operators.

- **Internet Service Providers (ISPs):** The law governing operations of ISPs went into effect in 1997 and the first license was issued that year. Currently, there are 25 licensed ISP providers, with 11 major providers. All ISPs operating in Albania use microwave links and fiber optic links; satellite links are rarely used for international connections. ISPs provide both limited and unlimited services, 24 hours a day. The number of Internet users at present is estimated at around 25% of the population. Albtelecom has invested in setting up a national Internet system which would enable ISPs to establish points of presence throughout Albania, but the level of service remains low. The major technology supplier is Alcatel. Albtelecom offers access in eight main regions in Albania: Tirana, Durres, Fier, Vlora, Korce, Shkodra, Elbasan and Gjirokastra. Its privatization might bring notable improvements in the ISP business.
- **Value Added Services:** Value added services are new to the market. ERT, the state telecommunication regulatory agency, has issued four licenses so far and all license recipients are operational.
- **Prepaid Card Services:** Prepaid services were introduced three years ago. Currently, 45% of the population is using the services of six prepaid card providers. The service of these six providers is not continuous and from time to time they cut their services. All prepaid card providers have based their service in Interconnection Agreements with Albtelecom, and they use Albtelecom's infrastructure. The providers offer lower prices than Albtelecom and their service is IP based. The prepaid card phone service generally provides for only international outgoing calls.

Opportunities

The privatization of Albtelecom might create opportunities for U.S. companies to provide equipment and solutions. In addition, the privatization of Albtelekom would mark the beginning of a new and more advanced era for ICT in Albania. A liberalized and competitive ICT sector should have a positive impact on the development of ICT infrastructure and related services in voice and data communication. The IT market is underdeveloped and represents good opportunity for growth.

Second Operator License: Albtelecom lost its monopoly in fixed telephony at the end of 2004. This has opened the way for a second PSTN provider to be licensed. Foreign investors may apply for such a license to operate in the Albanian market. The average teledensity for Eastern European countries is 30 phone lines per 100 inhabitants. Albania is currently at a density level of eight per 100.

Rural Services: The Government's rural telecom plan is mainly based on a private sector approach. The number of inhabitants living in rural areas is approximately 1.7 million, while the number of inhabitants in the rural areas that currently have a telephone line at home is around 25,000. Private rural operators lack the necessary capital, technology and interconnectivity to fully service this market segment. In addition, the existence of the two mobile operators has hindered the development of the fixed telephony. To date, private companies are not obliged to ask for connectivity via Albtelecom.

Mobile / GSM Services: AMC and Vodafone dominate the market. Currently, around 85% of Albania's territory is covered with GSM services. This corresponds to 90% of the total population. GPRS and EDGE, two other services based on the GSM network, are operating in Albania. The 15% state-owned stakes of AMC are scheduled for privatization in 2008. The GOA is expected to announce the tender within the first half of 2008. AMC and Vodafone share a market of 2 million customers with a total turnover that reached \$450 million in 2006. In Albania, the mobile market is characterized by high rates of profit. The GOA has pledged to issue a fourth mobile license in the near future.

IT Opportunities: Several investment opportunities are present in IT. These include: The development of high-speed bandwidth infrastructure for commercial use. Foreign investors can act as catalysts for mergers between local ISPs, telecom and IT companies, helping them overcome size constraints and achieve economies of scale. Even though the price of Internet access has decreased recently, it is still high by European standards. Transmission is inadequate with low quality connectivity. There is an increasing demand for physical facilities that meet the expansion needs of the ICT industry in Albania, such as private sector-led ICT parks and incubator programs. Although Albania's ICT strategy does not directly address hardware issues, its implementation may work in favor of attracting foreign investment and improving the overall climate for hardware manufacturing, which is currently underdeveloped. Investors can take advantage of a skilled, low cost workforce that is in close proximity to European markets. Albanian IT firms can serve the software development needs of Western clients as their competitive advantages include the availability of good "raw talent," use of the latest software development tools and time zone advantages relative to the U.S. and Europe.

Resources

- www.amc.al
- www.vodafone.al
- www.atnet.com.al
- www.albdata.net/
- www.interalb.net/
- www.ibs.com.al/
- www.infosoftware.net/
- www.bis-al.com/
- www.adanet.com.al/

Argentina

Overview

The Argentine telecommunications sector has shown significant investments and growth since 2004. The sector as a whole grew 20% in 2006 and 22.5% in 2007. Total sector revenues, including equipment and services, reached approximately \$7.5 billion in 2007. The market is expected to continue growing by 20% in 2008 and 19% in 2009. The highlight of 2007 was the launching of 2.5G services by cellular operators. Statistics from December 2007 show a 22% telephone line penetration rate (9 million telephone lines installed); 36 million cellular subscribers (85% penetration –projections for 2008 are for a 20% increase) and 16 million Internet users (42% penetration). Argentina has the highest cable TV penetration in Latin America -- 70% in the Buenos Aires Metropolitan Area and 45% nationwide. According to Prince & Cooke, Internet access services as a whole (broadband, dial-up, and free Internet access) represented 40% of the growth from 2006-07. Broadband access increased 100% in 2006

and 95% in 2007, reaching 2.8 million users – growth projections estimate an additional 80-100% in 2008. The cellular market followed with a 42% increase in number of subscribers (approximately 60% of users are pre-paid). International voice traffic increased by 20%, while local phone calls increased by 6%. Telecom equipment/infrastructure increased 12% in 2007 reaching \$1.9 billion and accounted for approximately 20% of total sector revenues. An investment increase of 20% is expected for 2008, mainly in 3G services for the GSM network.

Best Products/Services

- Broadband Internet access
- Broadband wireless access networks, including point-to-point, point-to-multipoint, Wi-fi, Wireless LANs and Wi-Max
- Cellular services, data transmission, SMS (short messaging services)
- Broadband and multimedia applications for cellular services, cellular phones, IP Phones, VoIP networks, VPNs and IP VPNs., NGN and internet and network security products.

Opportunities

Investments in 2008 will be focused in three areas - the deployment and enhancement of the cellular GSM network (towards 3G), the expansion of broadband Internet access via ADSL, cable modem, Wi-fi, Wi-Max and other wireless technologies and the migration to IP networks (NGN) and IP telephony. The wireless market represents one of the greatest opportunities. Specifically, broadband wireless solutions for rural areas appear to be a promising sub-sector due to increased demand from rural exporters. To this end, telecom operators have announced investments and are deploying networks with Wi-Max technology. The devalued peso has provided incentives for many niche areas, such as re-routing services, VoiP, call and contact center services, and pre-paid calling cards. The exchange rate has made labor and interconnection costs suitable for developing these types of services. These areas will continue to grow during 2008/9. Furthermore, cybercafés and public Internet pay cabins/outlets (“Locutorios”) experienced significant growth in 2007 due to a change in the Internet access pattern. Major telecom companies are optimistic about the future and are announcing new investments and new services for 2008-9 and beyond.

Resources

www.comerciosa.org/argentina_Editado/-SYaber/Telecommunications/Telecommunications_main.asp

Austria

Overview

The Austrian telecommunications equipment market is an open, well developed, and highly competitive market. Major worldwide telecom equipment suppliers such as Siemens, Motorola, Ericsson, Nokia, Alcatel, Philips, and Cisco Systems have dominant positions. The market totaled \$1.5 billion in 2006, an increase of about 7.1% over 2005. The fastest growing sector in the last few years was the end-user equipment market, which was led by growth in sales of mobile telephone sets. The U.S. market share was 9.3% in 2006. Manufacturers of communications equipment reported a decline in production by 2.2% in 2006. Increases in production in recent years have derived from strong investment in wireless communications. Investment activity by fixed network operators was modest. Exports by Austrian producers to the

EU once again increased, as did exports to Eastern Europe. Given the demand for additional development of infrastructure (for broadband communications, for example), the sector anticipates continuing increases in investment. In 2006, production of telecommunication equipment and devices declined by 2.2% and ran counter to the overall industry trend. However, the production value over a longer period is still at a high level. The domestic market declined significantly in 2006 as the major investment by mobile telephone companies of recent years no longer applied. The trend in the export segment was more positive and exports to EFTA countries increased by 24.7%, while the economic boom in Asia led to an increase in exports of 18.5%. The present level of orders points towards a stable business performance in 2007.

The Austrian market for enterprise infrastructure and network access equipment is expected to increase to \$376.0 million in 2007, from \$373.0 million in 2006. Sales of broadband equipment amounted to \$36.7 million in 2006. A total of 1.2 million broadband households were registered in 2006, which is expected to increase by approximately 16.7% in 2007.

Best Products/Services

- Enterprise converged voice equipment
- Dedicated content equipment
- Wireless LAN equipment.

Opportunities

With the expansion of the broadband sector, investment in network infrastructure will be needed. Best prospects in this area are optical fiber, power line, radio networks (W-LAN), and cable television networks (CATV).

Resources

Association of the Austrian Electrical and Electronics Industry (FEEI) www.feei.at/en/home
IDC Austria www.idc.com/austria

Contact:

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Email: ingeborg.doblinger@mail.doc.gov

Bosnia and Herzegovina

Overview

As of January 1, 2006, Bosnia and Herzegovina liberalized its telecommunications sector. The Communications Regulatory Agency (CRA) of Bosnia and Herzegovina is currently working towards resolving the issues of interconnection and tariff rebalancing as the necessary preconditions for full market liberalization. Information about the sector's regulatory framework can be found at www.cra.ba/.

The sector continues to be dominated by three state-owned incumbent operators – BH Telecom, Telekom Srpske, and Hrvatske Telekomunikacije Mostar (“HT Mostar”) -- which are the only providers of fixed and mobile telephony services. Telekom Srpske was privatized via a sale to Telekom Srbija for 646 million Euros in December 2006. Telekom Srbija is the incumbent fixed

line and mobile telephone provider owned by the Serbian Government and the Greek operator OTE (the Serbian Government in Belgrade, not to be confused with the Government of the Bosnian entity of Republika Srpska based in Banja Luka, owns a controlling interest in Telekom Srbija).

Since the beginning of the liberalization process, the CRA has awarded 13 licenses to private fixed telephony providers, 60 licenses to private Internet Service Providers (ISPs) and 75 licenses to private network operators, mainly cable TV operators. A notable development is the appearance of broadband Internet service deployed via cable TV. The CRA anticipates that many of the ISPs will venture into Voice over Internet Protocol (VoIP) business now that international voice service is liberalized. One VoIP provider, AirABA, is already active on the BiH market.

The complete list of all licensed service providers and network operators can be found at www.cra.ba/en/telecom/db/?cid=1165. In the past three years, the United Nations Development Program (UNDP) together with local experts has been engaged in creating an ICT development strategy. The results of this effort are presented on the project's web site www.is.gov.ba/.

Opportunities

For the time being, the government-owned incumbent operators will remain the best opportunity for marketing goods and services. For now, their near-monopoly position in the area of fixed and mobile telephony services will be allowed to continue to generate sufficient revenues to finance expansion and modernization of their networks. The companies face the challenge of migrating from traditional technologies dictated and traditionally supplied by Ericsson and Siemens to Internet-based technologies. All three incumbent operators have in their development plans the acquisition and deployment of the following technologies/services: IP/MPLS, VoIP, 3G, GRPS, EDGE, UMTS, broadband access networks – xDSL, Ethernet WAN, Ethernet Metropolitan Area Networks, Wi-Fi, W-LAN, etc. With the help of U.S. Trade and Development Agency, BH Telecom has finalized a Wi-Fi deployment feasibility study and should soon start a self-funded Wi-Fi pilot project. Simultaneously, BH Telecom and the U.S. Trade and Development Agency are working on the Metropolitan Broadband Network pilot project to test the deployment of a broadband network throughout metropolitan areas in Bosnia and Herzegovina. The finalization of the Wi-Fi and the Metropolitan Broadband Network pilot projects will allow BH Telecom to move forward with the implementation of both projects in 2008. As mentioned above, Bosnia and Herzegovina has 60 ISPs and 75 network operators, mainly cable TV businesses. The last year has seen a steady growth of Internet penetration which according to CRA has reached 20.3%. The appearance of CATV networks allowed the ISPs to forge partnerships with CATV operators and offer high-speed Internet via CATV. Subsequently CATV operators realized the value of their access networks and ventured in the ISP business. More fierce competition is expected in 2008. The recent liberalization of VoIP could signal the next big development in Bosnia and Herzegovina and may present a significant business opportunity; one local VoIP provider began operations in 2006. The ISPs and CATV operators are expected to play a significant role in providing the VoIP service as soon as the situation regarding the interconnection rule and tariff rebalancing becomes clear.

The incumbent operators are required by law to conduct open tendering procedures for the purchase of goods and services. Procurement notices can be found on the company websites.

Some form of local presence either directly or through agents and distributors is the best way to tap into these opportunities. Also, the Federation Government recently announced its intent to privatize the remaining two government-owned telecom companies, BH Telecom and HT Mostar, during 2008.

Resources

- Communications Regulatory Agency of Bosnia and Herzegovina info@rak.ba
www.rak.ba/ www.cra.ba/
- BH Telecom dd www.bhtelecom.ba/
- Hrvatske Telekomunikacije d.o.o. Mostar www.ht.ba/naslovna/index.php
- Telekom Srpske dd www.telekomsrpske.com/
- Eronet Pokretne Komunikacije doo www.eronet.ba/

Canada

Overview

Canada's \$11.2 billion telecom equipment market is predicted to grow 5% in 2008; with U.S. exports to Canada expected to decrease by 2% due to increased imports from China; Mexico and Malaysia. U.S. companies currently supply 23% of Canada's imports in the telecommunications market. The convergence of telecommunications technologies and information technologies, in an environment of deregulation and increased competition in Canada, will impact market growth. The Canadian government is creating demand for telecommunications equipment in Canada through the liberalization of telecom policy, and government initiatives aimed at supporting the modernization of high-speed optical fiber, the digitization of telecommunications, and the emergence of new access technologies (including broadband and satellite). U.S. telecom component suppliers have opportunities in selling to the sophisticated and fast-paced Canadian telecommunications equipment industry, primarily concentrated in Montreal, Toronto and Ottawa, including world leaders Nortel Networks and Research in Motion (manufacturers of the 'Blackberry') and other manufacturers of carrier current equipment, telephone or telegraph, switching equipment, wireless and rural communications. Ninety% of Canada's R&D is located in Ottawa, Ontario.

Best Products/Services

Photonics and wireless are particularly strong growth subsectors. U.S. companies will also find opportunities in fiber optic cable, satellite, cable and VoIP equipment.

Resources

- Statistics Canada
- Industry Canada
- Canadian Wireless Telecommunications Association

Colombia

Overview

The telecommunications market in Colombia is very dynamic, with annual growth rates usually above the GDP growth rates. During 2006 this sector grew by 15.7%, and the estimates for 2007

indicate that the high growth level will be maintained. Within the telecommunications industry, mobile telephony services recently have overtaken fixed line services in terms of revenue. Mobile services providers (Comcel, Movistar, and Tigo) currently have 40% of the total revenue while fixed line operators account for 27.7% of total revenue. Long distance services for the operators (*Colombia Telecomunicaciones*, ETB, and ORBITEL) account for only 7.4% of total revenue.

Currently, Colombia has over seven million fixed lines in service, with little increase over the 2005 figure. The fixed line teledensity rate is around 17%. There are approximately 28 million mobile subscribers, for a mobile penetration rate of 64%. The principal operators are Comcel, Movistar, and TIGO. Also, the U.S. company, Avantel possesses a small proportion of the mobile market, providing a trunking service, and has recently been granted interconnection with the cell phone operators. There is minimal local production in this industry; for the most part consumer goods and industry equipment are supplied through imports. Services too, (especially cell phone services) are provided by multinationals (Colombian companies form the minority shareholders within the operators Movistar and TIGO). Also, Internet services have seen continual growth. The Internet user density rate is about 8.2%. The diversity in broadband products and services is attracting greater numbers of U.S. companies to the Colombian market.

Best Products/Services

- Cable operators
- Local exchange carriers
- TV broadcasters
- Satellite companies
- Software and platform developers
- Internet service providers
- VoIP services providers.

Opportunities

For 2008, the expansion of broadband access and of mobile telephony services in Colombia will provide diverse business opportunities for U.S. companies. Traditionally the U.S. has been one of the main suppliers of telecommunications equipment. In recent years strong competition has come from China, although the U.S. still holds the lead in state of the art technology products. For 2006, China held 26% of market share while the U.S. had 20%. Broadband deployment is a priority for the Colombian Government, which has implemented programs for increased access, such as the Connection Agenda (*Agenda de Conectividad*). U.S. companies are encouraged to participate in upcoming government procurement programs. These programs are announced on the Communications Ministry website and at: www.contratos.gov.co/puc/

In the television industry, new regulations are currently under consideration. CS Bogotá is actively promoting the adoption in Colombia of the U.S. Advance Television Systems Committee (ATSC) standard for digital TV. Depending on the decision the regulator makes (anticipated around April of 2008), this sector could be potentially a highly lucrative market for U.S. business. This is especially the case in the area of broadcast transmission equipment, components for digital television consumer products, and programming. Also, the approval of the U.S. - CTPA would have a significant impact on this sector. Information technology products, which include telecommunications equipment, account for over 15% of total U.S. industrial exports to Colombia. Virtually all products within this grouping would become duty free upon entry into force of the Agreement, thus stimulating U.S. exports to Colombia.

Currently tariffs average over eight% and range up to 15%. Colombia would also be obliged to eliminate its prohibition on the importation of remanufactured IT goods, on entry into force of the Agreement. Colombia would be committed to eliminating tariffs on most remanufactured IT goods immediately and would have to phase out tariffs on a small number of remanufactured goods over ten years. The U.S. - CTPA would also favor U.S. products over Chinese exports to Colombia, as import duties for Chinese products would remain in force, while those for U.S. products would be eliminated. Colombia has also agreed to join the ITA by December 31, 2007. U.S. exporters of information technology products will all benefit from this provision.

Resources

- CS Bogotá contact: Gabriel Ramjas, Commercial Specialist
gabriel.ramjas@mail.doc.gov)
- National Statistics Department (DANE): www.dane.gov.co
- World Trade Atlas
- Communications Ministry: www.mincomunicaciones.goc.co
- Telecommunications Regulator (CRT): www.crt.gov.co
- Telecommunications Research Center (CINTEL): www.cintel.org.co

Cote d'Ivoire

Overview

Telecommunication sector is one of the most developed in the West Africa region. As of 2005, it boasted a booming cellular phone sector with a density of 12 cell sets per one hundred inhabitants. Since then, two new cellular operators have entered the market and added 500,000 subscribers each, while existing operators report substantial increases in their customer bases. In the Internet market, there are two companies providing high speed internet access and competition is steadily driving down prices. The only provider of fixed lines in the country is Cote d'Ivoire Telecom, the former state owned company sold to France Telecom in 1997. The company's monopoly on fixed line operations was scheduled to end in February 2004 but was extended. The draft telecommunications code, which ends Cote d'Ivoire Telecoms monopoly, was adopted by the Council of Ministers in January 2005 and is awaiting approval by the National Assembly (note that the election of a new National Assembly is required for approval of new legislation).

Best Products/Services

- Prepaid calling cards
- Voice Over Internet Protocol (VoIP) equipment and tools
- Wireless Networks
- Wi-Fi equipment
- Wi-Max equipment
- CDMA equipment
- DSL equipment
- GSM Solutions and Applications
- Call Centers
- Fiber Optic cables
- Billing Solutions
- Triple Play.

Opportunities

The Ivoirian Telecommunication market is growing for the full range of telecommunication equipment and components including copper and fiber optic cables, central office switches, cellular stations, data communications satellite, and microwave communication equipment.

Resources

- U.S. Department of Commerce Regional Office for Central and West Africa: www.buyusa.gov/westafrica
- Bureau National d'Etudes et de Developpement (BNETD): www.bnetd.ci
- Ivoirian Customs Office: www.douanes.ci
- Center for the Promotion of Investments in Cote d'Ivoire : www.cepici.ci/

Croatia

Overview

Until a few years ago, the Croatian telecommunications market showed an inclination towards fragmentation, with dozens of alternative ISP and telecom operators appearing after full liberalization of telecom services in the beginning of the decade; eventually, the small size of the market drove most of those companies out of business. Some companies that showed resilience and/or creativity were eventually taken over or merged; Iskon Internet, the only company that seemed to have the potential to compete with the incumbent telecom operator on a larger scale, eventually received an offer it could not refuse and is now a member of the Croatian Telekom group, which is in turn owned by Deutsche Telekom. However, the telecom companies – the likes of Metronet and Optima Telekom – that were properly capitalized have not only survived, but are currently playing a significant role in the financial markets as well, attracting significant investments through their debt and equity flotations. Five years ago, this scenario would have seemed impossible. The only market segment that remains undisturbed is the mobile telecommunications – Croatia is now well past the point of a 100% mobile telephony penetration, and with three existing mobile operators, there is little room for new market entrants. All of the Croatian telecommunication market segments are financially strong and well capitalized; this keeps the telecommunications equipment purchases at high levels.

Mobile communications remain the most developed market segment with penetration rate estimated at as high as 90%, while the broadband penetration sits at the bottom of the list with a penetration rate of just over 2%. The incumbent operator, T-Hrvatski Telekom, is focused on marketing ADSL and has launched a MaxTV service – digital TV combined with video-on-demand service for its subscribers. Mobile operators are keen on expanding their services to provide for mobile broadband; in the last two years alone, VipNet – one of the two major mobile operators that split the market roughly in half – invested \$100m in this segment of its network.

Opportunities

With the infrastructure being well developed, it is expected that the overall imports of carrier-grade equipment will slow down and the demand will shift to end-user telecommunication devices.

Resources

- Croatian Telecommunications Agency – www.telekom.hr/

Czech Republic

Overview

U.S. suppliers are price competitive in the Czech Republic, due to the continuously fluctuating dollar. The Czech IT and telecom market is vibrant and competitive. Penetration ratios are approaching those of Western Europe, government and private investment in the sector continues, and growth of over 8% is expected this year. U.S. companies with niche products and services will continue to find good opportunities by working with a local partner, either agent or OEM. Major players include SWS, Oracle, Auto Cont, Microsoft, Hewlett-Packard, IBM, Sun Microsystems, eD'T-Systems, Unisys, CompuSource/MacSource and Unicorn. Primary technology providers include Microsoft, IBM, Sun Systems, Oracle, Lotus, Novell, Compaq, Symantec, Spectrum and Citrix.

Best Products/Services

- Network equipment
- Software System Solutions
- IT solutions supporting the Internet
- Wireless equipment
- Data service equipment
- Voice service equipment
- Video conferencing equipment

Opportunities

- Telefonica increased its investment in the country and is committed to further modernization of the Czech telecom sector.
- E-commerce in the Czech Republic continues to grow. Thirty-four% of households and 92% of business have Internet access. Progress is slow but steady.
- Computer and office equipment hardware still accounts for a very large share (45%) of the IT market, but the market is gradually shifting to software and services (currently 19 and 36% respectively).
- Mobile phone usage outstrips the EU average – this country of 10.3 million people boasts 12 million mobile phones, and increasing numbers of Czech consumers are canceling their fixed lines. Overall spending on telecommunication equipment and services is steeply increasing.

Resources

- Czech Telecommunication Office (Regulatory body appointed by government)
- Sokolovska 219 Prague 9
- web: www.ctu.cz, e-mail: info@ctu.cz
- Association for Information Society www.spis.cz
- Association for e-Commerce www.apek.cz
- Center for e-Commerce www.e-commerce.cz

U.S. Commercial Service

Ms. Luda Taylor, Commercial Specialist (+420) 257 022 315 luda.taylor@mail.doc.gov

Denmark

Overview

Denmark has a strong international position in the IT and wireless sector and a first class telecom and data infrastructure. Denmark has one of the highest rates of Internet penetration, mobile phone penetration and e-business implementation in Europe, along with one of the highest IT spending level per capita in the world. Denmark is an excellent test market for new products/technologies and exporters due to its manageable market size and a general willingness by the population to exploit the newest technologies.

Telecommunications – Main indicators, mid 2007

(Subscriptions in 1,000s)

Broadband	1,865
xDSL	1,155
Cable	532
Fiber optic	35
WiMax	14
LAN (based on fiber optic, FWA, xDSL etc)	113
Mobile	6,023
UMTS (3G)	491
IP telephony (Danish service providers)	309

With more mobile subscriptions than inhabitants Denmark has a high distribution of mobile telephony. There are three companies with established GSM mobile networks. In addition, there are a number of companies who offer mobile services through leasing within these networks. Denmark awarded its third generation (3G) UMTS licenses through an auction in 2001 to four operators. Currently, the largest provider of 3G telephony is “3,” which launched its activities in Denmark in 2003. The company has lost was for a long time the sole operator with 3G services and now accounts for half of the UMTS market in Denmark. TDC is trailing close behind, with almost 30% of the market in late 2007. The other main mobile service providers in the market have recently started to offer their own 3G services. These services, however, are presently only offered in the largest Danish cities. Subscriptions to IP telephony almost tripled from 107,000 in 2005 to 309,000 by mid 2007. Around 45 Danish-based companies accounted for these subscriptions.

Broadband internet access is available to 98% of Danish households and businesses through the telephone grid. Of these, 60% can also access the internet using cable modems via cable TV networks (TDC/Stofa) or community antenna systems. The penetration of broadband access has risen dramatically in all parts of Denmark and the total number of broadband connections has more than quadrupled from 2002-2007 corresponding to 35 connections per 100 inhabitants. The fiber networks that are currently being expanded now reach more than 15% of the population making Denmark one of the most “fiber intensive” countries in Europe. Especially building associations in urban areas and larger businesses connect to these fast networks. New wireless

alternatives to broadband access such as WiMAX are emerging as the demand for easy internet access and mobile connectivity is rising.

Opportunities

U.S. products and services are generally looked upon as market leaders, and the new-to-market services, which are emerging in the USA, are also the services that have good potential in the Danish market. Normal market mechanisms prevail. New-to-market companies will face fierce competition from those already established here, many of which are American. Also, the number of local companies willing to invest in new accounts is very small. Consequently, new-to-market companies should be prepared to establish their own sales offices in the region, or, as some have already done, establish a market presence through joint-ventures, buy-outs, or strategic alliances.

Faster and cheaper internet access has increased the market for related products and services such as servers, routers, and cable modems. Laptops are now outselling desktop PCs, increasing the demand for wireless connectivity and expanding the market for access hardware to create such wireless networks in homes, offices, or WiFi hotspots in public places. An increasing number of private and corporate customers are making the switch to IP telephony creating a growing demand for related hardware and devices, just as there is a willingness among private Danish consumers to use online, non-Danish IP service providers especially for long-distance calls.

Resources

- The National IT and Telecom Agency, www.itst.dk.
- More information, please contact Peter Strandby, Commercial Specialist.

Djibouti

Djibouti Telecom, which split from the post office in 1999, provides satellite and submarine cable communications. In 2006 and 2007, Djibouti Telecom invested heavily in Chinese technology, moving from the French company Alcatel to Zhong Xing Telecommunications Equipment Ltd. (ZTE) for both its fixed and mobile networks, and buying Internet Broad Band services from Huawei

Dominican Republic

Overview

The Dominican market for telecommunication equipment increased from \$40.4 million in 2005 to \$54.4 million in 2006 (10.0%) and is expected to reach \$169 million (9.5%) in 2007. The telecommunication industry in the Dominican Republic has been growing over the last five years and has been characterized by greater competition, price reductions, and the introduction of new technologies, which allows the industry to offer modern products and services. The cellular sub-sector is the most competitive and the sub-sector that experiences the largest growth rate. The country enjoys a modern telecommunication law that facilitates investment in the sector by providing equal treatment for local and foreign investors, allows price rates to be set freely by the industry players, and guarantees interconnection rights. The Central Bank of the Dominican Republic reported that during 2007 the telecommunication industry contribution to the GDP

grew by 17.2%. Growth is more significant in the mobile sector where the number of wireless subscribers in 2007 was more than five times the number of wireless subscribers in 2002. As a result, teledensity in the Dominican Republic has increased from 30.5% in 2002 to 65.0% in 2007 according to the Dominican Institute for Telecommunications (INDOTEL).

Best Products/Services

The most promising subsectors in telecommunications for U.S. exporters are transmission equipment (voice, image, data) and telephone sets.

Opportunities

The Dominican market for telecommunication equipment is almost 100% import dependent. There is some local production of conventional telephone sets, but it is located in the Free Trade Zone sector. FTZ manufacturers are mandated to export no less than 80% of their total production, and the products that stay in the local market (no more than 20%) have to pay duties and taxes as on any other imported products. As a result, very little of the locally manufactured telephone sets stay in the Dominican market.

Resources

- Isolda Frias de Gottschalk: Trade Specialist isolda.frias@mail.doc.gov
- Instituto Dominicano de las Telecomunicaciones (Dominican Institute of Telecommunications) or INDOTEL: www.indotel.gov.do

Ecuador

Overview

The demand for telecommunications equipment and services is increasing due to population growth, new technology trends and increasing cellular market penetration. The market has been developed principally by professionals, young adults, early adopters and teenagers. There is no domestic production of cellular phones, and the sector is mainly served by US imports, directly from U.S. vendors, brokers and other foreign manufacturers that base their products with their US representatives. Mexico is the second highest source of cellular phone imports, considering that the major cellular telecommunications provider, Porta, has its headquarters in Mexico (America Movil).

Best Products/Services

Best prospect for this sector is cellular phones, particularly the low-end tier. Import duties increased in October for cellular phones, from 0% to 15%, as luxury items. Therefore, less expensive terminals should be in greater demand.

Opportunities

U.S. manufactured products are well regarded for their quality and performance. U.S. based cellular phone manufacturers have a great opportunity, given the proximity between the U.S. and Ecuador which reduces import timeframes, cuts down costs, and benefits from a common currency. A recent tax reform eliminated the 15% tax on special consumption (ICE) on

telecommunication services, which will drive consumption up and will most likely boost this sector.

Resources

- Central Bank of Ecuador (Statistics) www.bce.fin.ec

Egypt

Overview

The Egyptian telecommunications sector is one of the most developed in the Middle East/North Africa region. Forecasts expect the sector to grow significantly in the coming three years. The telecommunications market was officially deregulated at the end of 2005, a move that opened the market for new entrants and created a competitive market. The deregulation created opportunity for equipment and services providers. A third GSM 3G license was awarded in April 2006 for \$2.9 billion to the consortium led by the UAE Company Etisalat. In line with the liberalization of the telecommunication services, the National Telecommunication Regulatory Authority (NTRA) has agreed to offer the international call service licenses to any of the current three mobile operators. Each mobile operator is allowed to extend this service to its customers only. Etisalat already acquired this service. Number portability for the 3 GSM operators is implemented. The NTRA is in the process of issuing a second license for a fixed line network. As a result of the unprecedented success of Egypt's Smart Village high technology park, government officials announced a plan to establish on an area of 75 acres a new IT investment zone to be operational by 2012. The new zone will create 100,000 job opportunities.

U.S. companies will find good business opportunities in the telecommunication sector, with the launch of a second fixed land license, and the new technologies and equipment needed. The mobile market is growing and also represents a sizeable market niche. The three GSM operators will be awarded licenses to offer international calls and transmit voice and data. The call center business is booming in Egypt. AT Kearny has ranked Egypt as number 12 worldwide. The largest call center is located in the Smart Village located in 6th October City.

Best Products/Services

- Billing Solutions
- Call Centers Equipment
- Clearing houses for roaming
- DSL
- E-numbering
- Fiber Optic Cables
- GSM Solutions and Applications
- Media Convergence
- Mobile Number Portability
- Network Centers
- Triple Play
- Voice Over Internet Protocol (VoIP)
- Wi-Fi
- Wi-Max
- Wireless Networks and Solutions

Opportunities

With the deregulation of the industry and the subsequent growth and investment, a wide range of telecommunication equipment and components, including copper and fiber optic cables, central office switches, cellular stations, data communications satellite, and microwave communication equipment will be required. New entrants will find business opportunities in wireless

technologies, 3 G, Wi-fi, Wi-Max, VoIP, CDMA, GSM solutions and applications. Wireless technology is being implemented around Cairo with hotspots installed in a number of hotels, coffee shops and restaurants.

Resources

- Commercial Service in Egypt: www.buyusa.gov/egypt/en/
- U.S. Embassy: cairo.usembassy.gov/
- USAID: www.usaid-eg.org/
- World Bank: www.worldbank.org/
- American Chamber of Commerce in Egypt: www.amcham.org.eg
- Egyptian Government Web Portal: www.misr.gov.eg/english/default.asp
- Ministry of Communications and Information Technology: www.mcit.gov.eg/
- Telecom Egypt: www.telecomegypt.com.eg/home-en.asp
- National Telecommunication Regulatory Authority: www.tra.gov.eg/english/Main.asp
- Information Technology Industry Development Agency: www.itida.gov.eg/
- MobiNil: www.mobinil.com/
- Vodafone: www.vodafone.com/
- Etisalat: www.etisalat.com.eg/
- Contact for the Commercial Specialist in charge of the Telecommunications Sector:
Hend El Sineity, Email: Hend.El-Sineity@mail.doc.gov

Ethiopia

Overview

Ethiopia's telecommunication sector is a state monopoly with the Ethiopian Telecommunications Corporation (ETC) the sole provider of infrastructure and telecommunications and internet services. Ethiopia continues to invest in expanding and upgrading its telecommunications network. Ethiopia currently has the lowest telephone line density, albeit improving, in Africa, with less than 2.1% coverage among potential fixed line customers. As of December 2007 there are 920,063 fixed lines, 1.8 million mobile phone users and close to 29, 000 internet service subscribers in the country.

ETC has plans to aggressively expand telecommunications services through 2009/10 with \$1.5 billion in vendor financing obtained from China companies. This expansion is focused on providing fixed wireless service in all of Ethiopia's 10,000 rural villages with dedicated lines for agriculture, education, health and consumer use. In addition, ETC has plans to expand ICT infrastructure across the country to support voice, data, and video services. To implement these plans, ETC will acquire digital overlay switches, transmission systems (mainly fiber optic backbone), digital microwave, satellite and wireless technology. Other projects contained within ETC's development program include DRMAS stations, VSAT stations, coin- and card-operated telephones, expanded internet and mobile telephones. For all these projects, ETC will make substantial investments over the coming years. The Government of Ethiopia has no plans in the immediate future to introduce competition into the areas of service provision or allow independent infrastructure construction.

Best Products/Services

- Wireless internet service in partnership with the Ethiopian private sector.
- Fixed networks, switching and optical networks are other areas where U.S. firms could supply equipment and/or services.

Opportunities

ETC will embark upon the following identified project areas in the coming few years. However, exceptionally favorable vendor financing from Chinese companies limits U.S. opportunities in many of these projects.

- The directive on value added services, including ISP, issued by the Government of Ethiopia has allowed foreign companies to participate in collaboration with local partners.
- Mobile network expansion by more than 7 million users
- About 10,000 km optical fiber route construction
- Expansion of fixed wire line by about 4 million
- Rural connectivity for 10,000 villages
- Optical access in major towns of the country
- CDMA WLL projects for major towns
- Telecommunications network planning and design
- Contract supervision
- Capacity building in the area of project management

Resources

- Ethiopian Telecommunications Corporation www.ethionet.et

Finland

Overview

Although with only 5.3 million people the Finnish market is small, Finnish consumers and companies have proven to be quick to adopt new technologies. The telecommunications market in Finland is fully liberalized – no licenses are needed, except for digital television networks and building mobile networks. Finland's Ministry of Transport and Communications is responsible for licensing. The fact that Finland was among the first to open its telecommunications market has resulted in low mobile tariffs; according to a recent Organization for Economic Cooperation and Development (OECD) study comparing average mobile phone charges across the OECD countries, in 2007, Finland ranked number one for the third year in a row. Finland has been a pioneer in popularizing mobile phones. At the beginning of 2000 it was the country with the highest penetration rate in the world: 65% of Finns were already using mobile phones. The penetration rate now stands at 100% and there are nearly 5.2 million subscribers.

Since July 2003, mobile customers have been able to switch operators while preserving their mobile numbers. This has made switching operators more attractive to customers, and thus substantially increased competition between service providers, in the already highly competitive

telecommunications market. With an Internet penetration rate of 79%, Finland is among the top nations in Internet use. It is also the world's leading country in electronic banking.

The two major operators in the fixed-line telecommunications market are Elisa Communications and TeliaSonera. Most smaller Finnish telephone companies operate under the Finnet group, which is the third largest player in the fixed line market. The major players are facing increasingly strong competition from newer providers of fixed line, mobile, and Internet services. Third-generation mobiles are foreseen to become more widespread in Finland. One of the reasons is the ending of the ban on “tie-in” sales of phones and services.

On June 22, 2005, the Government granted an operating license to Digita Oy to build a new digital mobile communications network, using Flash-OFDM (orthogonal frequency division multiplexing) technology. It will be the first time in the world this technology will be put to extensive use in mobile networks. 2/13/2008 In 2005, there were over 1.2 million broadband connections to households in Finland. This was more than in other European Union (EU) countries, on average. The goal of national broadband strategy is to allow every Finn to have access to high-speed, easy to- use, and affordable data transfer connections and to make Finland a European leader in availability and use of high-speed telecommunications. In 2006, the growth rate was 22%, and by the end of the year, Finland had a total of 1.428,000 broadband subscriptions, including both households and corporate customers. By the end of September 2007, the number of broadband subscriptions had reached 1.574,000.

Opportunities

Although highly competitive, the telecommunications sector is also growing fast, with high demand for Internet and mobile services and content expected to continue. With the increasing numbers of broadband Internet connections, e-commerce is expected to benefit.

Due to high technical standards and the liberalized telecommunications market, Finland serves as an excellent test base for new technologies for U.S. Information technology (IT) companies. U.S. IT companies wishing to enter the Baltic markets and Russia (especially St. Petersburg) should view Finland as a natural gateway and Finnish companies as experienced partners in any such effort.

Please see the Supplement to the European Union Official Journal <http://ted.europa.eu>. See also www.e-finland.fi (e-business projects).

Resources

- Ministry of Transport and Communications www.mintc.fi
- Finnish Federation for Communications and Teleinformatics www.ficom.fi
- Local contact tarja.kunnas@mail.doc.gov (

France

Overview

The IT and telecommunications market is currently being supported by the broadband and mobile telephony sectors, which should continue their rapid growth and further drive the

industry. The French broadband market is going through an amazing phase of growth and convergence. The number of traditional wire line broadband connections to French residences is increasing steadily, dominated by ADSL. Use of broadband-capable, also known as “Third Generation,” cell phones, is also growing, as they aggressively target a maturing French mobile sector. Wireless broadband connectivity is increasing as well, especially through the spread of public hot spots. France is among the five largest markets – the UK, Germany, France, Spain and Italy – which experienced robust growth in broadband penetration. All five countries now have a per-capita penetration rate of higher than 15%.

For consumers, this rising access to broadband is enabling and driven by the growth of e-commerce and e-media consumption in France. For businesses, broadband connectivity is an increasingly integral part of marketing, communication and distribution strategies. The trend in French Internet consumption continues to be more connectivity and better services for less money. The number of high-speed Internet subscriptions has increased to 14 million as of September 30, 2007.

The new field of competition for Internet providers in France lies in the convergence of services offered. Most Internet providers now offer VoIP and or Triple Play services (data, television, voice). Mobile usage in France has traditionally lagged behind the European average, but the country has been catching up in recent years. Penetration is over 84%, up from 55% in 2002. The number of mobile subscribers as of September 30, 2007 reached 53,075,900. A further development in the mobile sector is the appearance of MVNOs or Virtual Mobile Network Operators. MVNOs buy minutes from one of the major operators (in this case, Orange, SFR or Bouygues) and then redistribute those minutes to consumers. As of September 2007, MVNOs represented 2,073,300 customers and 4.06% of the market.

The telecommunications and IT sectors already play a central role in the French economy. As these sectors experience further growth, the market for infrastructure and equipment will continue to offer opportunities to U.S. companies.

Best Products/Services

General French business and consumer commitment to mobility and broadband consumption is clear. French consumers, particularly the young generation, seem to adapt fully to the continuing convergence of technologies. Consumer demand for mobile products, broadband technology, and services such as video on demand, mobile television and videophones is increasing.

Opportunities

As broadband and wireless demand matures the French market for telecom infrastructure, equipment and support services will offer many exciting prospects for American exporters. Security is a major concern of the French consumer in regards to their online activities. French consumers have shown a willingness to pay more for equipment or services, with better security. As broadband usage increases, so will the demand for protection of online transactions, and the need for evolving solutions to old and new Internet menaces (spam, viruses, fraud etc.). Indeed, if demand for security is not satisfied, it may threaten the growth of demand for broadband in general. American companies have historically been more efficient at meeting client demand.

Resources

- Regulation Authority for Electronic and Postal Communication (Arcep) www.arcep.fr
- French National Frequency Agency (ANF) www.anfr.fr
- Association of Internet Service Providers (AFA) www.afa-france.com
- French Association of Network & Telecom Service Operators (AFORS)
www.aforstelecom.fr
- European Telecommunications Standards Institute (ETSI) www.etsi.org
- Trade Association for the IT and Communications Sector (TICS)
www.alliance-tics.com
- Trade Association of operators and telecommunications companies (SIOTEL)
www.siotel.org
- French Association of Mobile Operators (AFOM) www.afom.fr
- Embassy U.S. Commercial Service Trade Specialist:
Myrline.Mikal-Goide@mail.doc.gov Phone: 33-1 43 12 79 80
www.buyusa.gov/france/en

Georgia

Overview

The independent, self-financed Georgian National Communications Commission (GNCC) regulates telecommunication and postal services in Georgia. The commission sets up service fees for license holders, auctions and regulates the radio frequency spectrum, regulates interconnection of the telecommunication networks, and provides certification, standardization and metrology services. Major international investors in this sector have been the U.S., Korea, Turkey, and Israel. There are three international cellular phone companies: Magti (U.S.) , Geocell (Turkey) and Vimpelcom (doing business as Beeline) (Russia). All use the GSM system. There are 2.4 million cellular telephone users in 2007, compared to 800,000 in 2005. Cellular phone penetration is 47%. There are 193,000 internet users, 4% of the population. The cellular system is rapidly modernizing, bringing 3G services and WIMAX to most of the country. There are 544,000 fixed telephone lines, a 12% penetration rate.

Opportunities

Telecommunications has become one of the most attractive sectors for foreign investors as a result of growing market demand and revenues generated by local operators. Expansion of telecommunications infrastructure at the national, regional and international levels is seen as an integral part of Georgia's economic development and its successful integration into the global economy. Cellular telecommunication services have been the most profitable sub-sector. Georgia does not produce telecommunications equipment. The two main cellular telephone operators in Georgia are Magti and Geocell.

Resources

- Georgian National Communications Commission
www.gncc.ge/index.php?lang_id=ENG&sec_id=10050
- Magti www.magtigsm.ge/nweb_new/index.php?section=8&lang=eng
- Geocell www.geocell.ge/v2/eng/index.php

- Beeline (Vimpelcom) georgia.beeline.net/en/index.html
- Tbilisi Yellow Pages telecommunications section
www.yellowpages.ge/rubrics.php?id=7&lan=2

Germany

Overview

Telecommunications spending increased about 1% in 2006 (after a 1.5% increase in 2005). Broadband will remain the key application, with more than 7 million connections and an 8% penetration rate. DSL will continue to represent the overwhelming majority of broadband connections, with Deutsche Telekom (DTAG) providing more than 83% of all broadband connections. VoIP is expected to change the competitive landscape. In the mobile segment, providers are investing in UMTS infrastructure and WiMax applications. Demand for mobile phones is beginning to decline due to market saturation.

Best Products/Services

- Broadband equipment and services
- W-Lan equipment and services

Opportunities

Broadband technologies (DSL and TV cable) will offer considerable opportunities for suppliers of technology and services.

Resources

- German Regulatory Authority www.bundesnetzagentur.de
- Electro-technical Manufacturers www.zvei.de
- German Information Technology Manufacturers www.bitkom.de
- German telecommunications service providers www.vatm.de
- Commercial Service Contact: volker.wirsdorf@mail.doc.gov

Ghana

Overview

As a result of the government's liberalization of its telecommunications sector, annual growth has been significant. There are 2 land providers and 4 cellular companies. There are also 29 Internet Data service providers, 57 VSAT data operators, and 25 public/corporate data operators in operation as of December 2006. There are 129 FM stations and 8 TV stations. Imports are mainly for landline projects, private mobile telephone services, cellular telephones, and broadband data transfer services. 2006 and 2007 saw increases in the subscriber base of mobile operators as they attempted to out compete each other. The government is currently considering abolishing the import duty and VAT on all mobile phones imported into the country to be replaced by a specific excise duty per minute of airtime use. Subscriber numbers for the various services may be obtained by accessing www.nca.org.gh. The rapid increase in the market size resulted in a high volume of imports of telecommunications equipment, including switching and transmission equipment, telephone, and fax machines, radio and television equipment, and cellular radio telephones.

All the mobile telephone companies are extending their services to the rural areas. For a population of approximately 22 million people, Ghana has 7,392,449 telephone lines as of December 2007. There are 364,918 fixed lines, 10,824 payphones and 7,016,704 mobile phones. The mobile phone subscriber base is growing at an average of 600 clients per quarter. While mobile penetration into rural areas has recently increased tremendously, the areas still remain largely under served by both landline and cellular companies. The national network operators have programs underway to meet the performance targets under their licenses. Ghana Telecom has been expanding to meet a 400,000- telephone line requirement. Celltel has just bought a 75% share in Westel Ltd.

Greece

Overview

Much of the movement in the sector is being spurred by the incorporation of EU regulations in GOG telecommunications law. The latest Greek laws will improve the quality and the pricing of fixed voice telephony and increase access to broadband services. The newest Directive of the National Committee of Telecommunications and Posts (EETT) effective from 01/01/2008 until sets a ceiling price for alternative providers at 0.01131 €/min while the new target value was set at 0.00849 €/min.

There are almost 6 million fixed-access lines in use, or about 72 per 100 inhabitants in Greece. The telecommunication network has been upgraded and is now fully digitalized. OTE, the state owned Hellenic Telecommunications Organization, offers national coverage for both ISDN and DSL and serves more than 60 million subscribers throughout the Balkans, Middle East and Black Sea countries. Recent laws aimed at increasing high-speed Internet access in Greece mandated the unbundling of public telecommunications assets, which opened the market for firms in this industry. As a result, the development of DSL and ADSL (broadband connections) is a business opportunity for U.S. firms. The percentage of households in Greece that had Internet in 2007 was 25%; a 2 per cent increase from 2006. One in seven household has a broadband connection.

Nowadays the majority can enjoy benefits offered through broadband connections due to the large providers' investments of the capital raised from the expression of interest in higher speeds, from end users during the 2nd quarter of 2007. During that quarter, broadband penetration rose from 4% to 12%, with broadband lines numbering 904,256. Local Loop Unbundling (LLU) lines for the same period reached almost 100,000, which quadrupled, compared to the previous quarter (20,000 lines). Worth mentioning is the preference of high speed providers such as Forthnet of U.S. products to support their packages, like the U.S. Robotics router the company provides to aDSL2 users.

Packages like double play and Voice-over-IP (VOIP) are increasingly popular and compete directly with the pay-to-communicate packages other providers such as OTE offer. However, each year Greeks get more and more familiar with new technologies, so estimates say that the industry will shift towards e-communications. Mobile Telephony Mobile telephony in Greece has seen dramatic growth over the past several years and has an 87% penetration rate in Greece.

As a result, profits from mobile telephony now account for almost 29% of total industry profits in Greece.

Opportunities

Many new fixed wireless and UMTS licenses have already been awarded in Greece. The build out of these projects is expected to provide significant opportunities for U.S. firms and should enable the Greek telecommunications industry to record even higher growth rates in the coming years. Currently, the Greek telecommunications market has annual revenues of nearly \$7 billion.

Resources

- www.yme.gr
- www.ote.gr

Guyana

Overview

The Guyana Telephone and Telegraph (GT&T) company purchases the majority of its telecommunications equipment from the United States, from a wide range of suppliers. GT&T is engaged in a number of projects for both landline and cellular phone services throughout Guyana; as a result of these projects there is a demand for additional telecommunications equipment by the company.

Best Products/Services

- Telecommunications switching equipment (cellular, landline and data)
- Wireless local loop equipment
- Cellular and landline phones
- Cellular towers
- PBX equipment
- DSL/Data equipment
- Internet/data circuits.

Opportunities

The government of Guyana is seeking to reform the telecommunications sector by introducing further competition. However, the future of the telecommunications industry will depend on the outcome of an ongoing dispute between U.S.-based Atlantic TeleNetwork (ATN) and the Government of Guyana. ATN owns 80% of Guyana Telephone and Telegraph (GT&T) and is the sole provider of line telephony in Guyana; it has exclusive rights until contract expiration in 2011. Guyana's President, Bharrat Jagdeo, has recently affirmed that the government seeks to open up the sector to competition prior to 2011, which would violate its contract with ATN. Negotiations to resolve the impasse have commenced, but thus far have not borne fruit. Two companies, GT&T and Digicel Guyana, provide cellular service. In 2007, the telecommunications sector attracted approximately \$90 million in foreign direct investment.

Resources

Economic/Commercial Specialist Tel: (592) 225-4900 ex. 4228
Embassy of the United States of America, Georgetown PickettDB@state.gov

Haiti

Overview

The telecommunications sector is a strong market. The rapid expansion of the telecommunications market has been accompanied by a growing demand for diversified telecommunications services. Approximately 10 firms offer Internet access and data transmission services which has led to the growth of a computer culture.

The government's telecommunications regulatory agency, Conseil National des Telecommunications (CONATEL -- equivalent to the FCC) regulates the telecommunications sector. CONATEL assigns frequencies and issues operating licenses to all telecommunication companies. The opening of a third private cellular phone company in 2007 allowed Haiti to reach a telephone density of 250 telephones per 1000 people. Between 2000 and 2007, total investment from three major wireless companies (Digicel, Comcel and Haitel) reached approximately \$350 million. In 2006, U.S. exports of telecommunications equipment represented over seven% of total U.S. exports to Haiti (\$809.4 million). The telecommunications market is highly concentrated in Port-au-Prince and its suburbs, and to a lesser extent in other major cities. As the market matures, the private sector expects that it will expand to other cities at a rate of approximately 25-30% a year for the next five years. Since 2000, more than 500 cyber cafés opened in Haiti, mainly in Port-au-Prince and in the provincial cities. The cyber cafés offer access to low speed Internet connections for long distance communications and Internet browsing.

Opportunities

The establishment of three GSM cellular companies may result in growing demand for telecommunication equipment for major cities without coverage. An expanded market for internet services is also a viable opportunity.

Resources

- CONATEL (+509) 221-8337, 221-0091, 223-0720, 222-0119, 223-0720
conatel@conatel.org

Honduras

Overview

In order to comply with CAFTA-DR, the telecommunications sector in Honduras needs to evolve towards a more competitive, open market. Attempts to pass CAFTA-compliant reform legislation have been repeatedly stalled since mid-2005. Entrance of new players in the fixed telephony market through the telephony for All (TPT) project, launched in 2003, was designed to generate profound changes in the country's telecom market structure, stimulate increased growth and network modernization. Unfortunately, those new entrants were permitted to operate only as sub-contractors of the national utility, Hondutel, and little progress has been made since then. A major market development took place in December 2005, when Hondutel lost its exclusivity for international long distance services. During 2008, a new Telecom Framework Law may pass, which could stimulate competition and investment further, simplify licensing procedures, and strengthen the sector's regulatory entity (Conatel). If legislation passes, the landscape of

investments in the telecom sector in 2008 could change dramatically. Irish-Jamaican cell operator Digicel may enter the market, after posting a winning bid of \$80 million for the fourth cellular band.

The other mobile operators are already working to improve their positions in the local market. Access to telecommunications service in Honduras remains well below the Latin American average. Total number of fixed lines in service by year-end 2007 was 713,597 (up from 550,000 in 2006), with only 9.75 lines per one hundred inhabitants. Cellular lines, including packages and pre-paid lines, are much more prevalent. Total number of cellular lines is more than 2.2 million, with a density of more than 30 per 100 inhabitants. Among the most important investments conducted in the telecom sector during the period 2002-2007 were fixed telephony (through Hondutel and TpT sub-operators), mobile telephony (conducted by cellular operators Celtel-Millicom International Celular (Tigo) and Aló-América Móvil (Claro), Cable TV, data transmission, and radio broadcasting.

Best Products/Services

- Fixed wireless (WiMax) and wireless telephone systems and equipment
- Data transmission equipment
- Fiber-optic equipment
- Internet, VoIP, and broadband integrated solutions.

Opportunities

Mobile telephony expansion and internet access have been the highest growth areas. Increased opportunities exist for value added and triple-play services, such as those including telephony, broadband internet access, and video. Honduran topography also makes it difficult for increased access in fixed telephony, which creates more growth opportunities for wireless technologies in general.

Under CAFTA-DR, U.S. exports under the Information Technology Agreement entered the Honduran market duty-free immediately after the treaty's enactment. At the regional level, the Central American countries and Mexico plan to develop a \$60 million fiber optic broadband telecommunications network project to help facilitate data exchange and interconnection, known as the Mesoamerican Information Highway. This project, to be completed by early 2008 and supported by the IADB and CABEI, will utilize the region's existing electricity transmission infrastructure. Increased liberalization, coupled with the highly dynamic nature of the telecom sector, should stimulate the provision of new telecom services in the Honduran market when it moves forward. Further expansion of the Honduran telecommunications infrastructure is also anticipated, as the various operators compete to service the current unsatisfied demand for fixed telephony. At the same time, Hondutel needs to embark in important investment efforts in order to improve its network's capabilities and secure its long-term competitive edge, as well as to continue expanding into the mobile telephony market as a relatively new third cellular operator in the country.

Modernization investments are also foreseen in the areas of fiber optics; PCS; microwave network; fixed wireless band width access; and expansion of the telephone operating-center, submarine cable network, and trunking system. The National Telecommunications Commission

(Conatel) recently awarded a fourth mobile telephony service concession, involving the provision of Personal Communications Services (PCS) throughout the Honduran territory. The new concessionaire of this fourth mobile band will be competing with Tigo, Claro and the national telecom company Hondutel.

Resources

- National Telecommunications Commission www.conatel.hn
- Telecom Utility Company (Hondutel) www.hondutel.hn
- Regional Technical Telecom Commission www.comtelca.hn
- United Nations Development Program www.undp.un.hn/pnudhondutel.htm
- International Telecommunications Union www.itu.int
- Inter-American Development Bank www.iadb.org/ppp
- Honduras Trade Portal www.hondurastradeportal.com
- Regional Trade Statistics www.sieca.org.gt
- National Statistics Institute www.ine-hn.org
- CAFTA-DR Website www.export.gov/cafta
- Latin Business www.latinbusinesschronicle.com/technology
- Central American Bank for Economic Integration www.bcie.org
- CTIA (wireless) www.ctiawireless.com
- NxtComm (voice, video, data) www.nxtcommshow.com
- InfoComm (audio visual) www.infocomm.org
- Int'l Wireless Communications Expo www.iwceexpo.com

Indonesia

Overview

The country's telecommunications sector underwent major regulatory restructuring leading to the previously exclusive domain of PT Telkom began to open up with the entry of Indosat, and Telkom starting to have a major impact on the international call business. At present, Indonesia has around 9 million fixed-lines telephones, representing a teledensity of only 4.0 lines per 100 people. To stimulate the development of country's teledensity rate, PT Telkom, PT Indosat and PT Bakerie Telecom deployed CDMA fixed wireless service. The Indonesian cellular market is heating up and potentially lucrative as demand for mobile phones continues to increase. With around 64 million subscribers in early 2007, a penetration of 28% indicates there is still plenty of room for growth. The number of subscribers is forecasted to reach 76 to 80 million by the end of 2007. The shape of the market is expected to undergo change as a number of new operators, with foreign partners, like Singapore Telecommunications Limited (Singtel), Singapore Technologies Telemidia (STT), Telecom Malaysia, Maxis, and Hutchinson, enter the market. Three cellular operators – Telkomsel, Indosat and Excelcomindo - introduced Third Generation (3G) services in 2006.

Best Products/Services

- Base transceiver stations
- Switching, ancillary and transmission equipment
- Cellular handsets
- Content providers.

Opportunities

Indonesia's telecommunication infrastructure market has good potential for wireless equipment, services and content provider companies. The rapid expansion of the country's cellular and fixed-wireless networks has driven increased spending for telecom infrastructure.

Resources

- Indonesian State Ministry of Communication and Information www.kominfo.go.id

Israel

Overview

Israel's telecommunications market is currently estimated at \$6 billion. In an era of fast communications and accessible information, the telecommunications market has been a major driving force in the Israeli economy. In 2005-2006, the average growth rate was 3.9%. The main factors in this growth are the cellular, Internet, and multi-channel television fields.

Telecommunications presently contribute approximately 4% of the Gross National Income, and in 2006, the average ratio of household communications expenditures from total household consumption expenditure was 7% (\$130). The year 2007 included many developments in the telecommunications market. According to a local analyst, the future lies in "Triple Play convergence", i.e. voice, data video, all on a single network. Mergers and acquisitions in the telecommunications market, and consolidation of different companies offering cellular, Internet and fixed services are already in progress. The end result will be three major telecommunication groups offering everything under one umbrella. The Israeli telecom market consists of four domestic cellular operators, six international service providers, one cable television provider as well as one satellite television provider, three leading Internet service providers and two fixed domestic operators with universal service obligation. Mobile services are the leading market segment that constitutes 50% of the revenue, followed by fixed services, cable TV, international long distance calls and Internet. There are 3.1 million direct exchange lines, 7.7 million cellular telephone subscribers, 1.4 million multi-channel TV subscribers, and over 2 million households have an Internet connection, mainly broadband.

Many Israeli companies are active in developing and manufacturing telecommunications and networking equipment. Case in point, and the original cell phone technology was largely developed by Motorola Israel. Still, Israel imports over \$1 billion of telecommunications equipment each year, of which \$300 million is imported from the United States.

In addition, over \$100 million in telecom services are imported from the United States. The substantial changes that have taken place in Israel's communications market over recent years are due, in part, to a basic change in policy on the part of the Ministry of Communications, which serves as the primary sector regulator. The Ministry of Communications' objectives for the coming year, include: Expanding competition in the fixed market, by licensing new competitors without universal service obligation; preparing a policy on VOIP communications (Voice Over Internet Protocol) based on VOB (Voice over Broadband) Technology and on a recently-published consultation with the public; promoting the Wimax technology and

developing a policy on Wimax; promoting the deployment of advanced cellular services and promoting the competition in the cellular market- MVNO (Mobile Virtual Network Operator) concept is being discussed as one possibility; ensuring the existence of original Hebrew productions;

Israel has one of the highest household broadband penetration rates in the world, building on even higher Internet penetration. Three major Internet service providers serve more than four million users, over 60% households and 80% businesses. Israel's very high broadband penetration rate provides great potential for triple play and digital media market developments. Both Bezeq, with its satellite TV subsidiary YES and HOT, the merged operating entity of the three Israeli cable TV companies, have the potential to easily deliver triple play services as each possesses both content and delivery mechanisms. IPTV is a hot area today, but the service is still under development.

Another area of development is the Fixed Mobile Convergence (FMC) market. A market survey conducted by BBDO Consulting shows that over 65% of fixed and mobile operators will have implemented FMC services into their products over the next three years. There are a number of Israeli companies offering FMC solutions allowing for Dual-Mode Handset service. Bezeq's (the Israeli ILEC) long-term goal is to merge its activities with those of its subsidiaries in order to become one group that provides cellular, wireline (local and international calls), IPTV, and Internet services, over converged fixed-mobile infrastructure. However for now, regulations in Israel require structural separation between service providers. This means a complete separation between cellular, international calls and local calls operators; i.e., separate infrastructures, subscriber base and management.

The cellular market segment is the main growth engine behind the Israeli telecommunications market. All four operators in Israel provide digital technology countrywide coverage and modern 3G (third generation) services. Pelephone uses CDMA2000 technology. The second operator, Cellcom, uses the American IS-136 TDMA, European DCS 1800 and UMTS. Orange (Partner Communications), the third operator, uses GSM technology DCS 1800 and UMTS. The last licensed cellular operator is MIRS, which uses iDEN ESMR technology. The penetration rate of mobile phone subscription exceeds 100% (over 7.7 million mobile subscribers).

The cellular market continues to search for new and innovative applications such as value added services for its customers. Israel is a highly urbanized, technologically literate society. Israelis are used to having world-leading technology in many fields, and mobile phones are no exception. All mobile operators make a good profit from the high volume of traffic generated. According to market players, voice is not what makes the cellular market interesting. Israel is a good market for operators to test new applications. Israel is technologically oriented, making launching new services easier. With mobile penetration reaching 107%, Israel is a market of users who know what they want and how to use what they get. There is a continual demand for technology that is more sophisticated as Israelis update their handsets regularly, at least once a year. The "experience rate" for new hardware and applications is high. Operators are aware of this and strive to accommodate their subscribers. Many Israeli companies are active in developing and manufacturing telecommunications and networking equipment.

Opportunities

Opportunities are in the IP Networks – Voice, Video, Data and Multimedia, FMC, IPTV, Wi-Fi, WiMAX and VOB. As the Israeli telecoms industry continues to expand and increase in revenue and with the introduction of new technologies, the market will continue to offer many opportunities for U.S. exporters.

Resources

- www.moc.gov.il/new/english/index.html
- www.iaei.org.il/

Italy

Overview

The Italian market for telecommunications equipment and services is the third largest in the European Union. Italy is also one of the largest mobile communications markets in Western Europe and one of the most advanced, considering technology and consumer preferences. Mobile phone diffusion in Italy is among the highest in the world, with close to 86 million SIM cards activated in June 2007 (+13.6% over the same period in 2006), and over 19 million of them enabling UMTS services. Clients served are 45 million, equaling a penetration rate of approximately 76%.

Although still behind other major European countries, Italy has also experienced major growth with regard to Internet usage in the past few years. The number of business and home Internet users is estimated to have reached 30 million in 2007. Italian Internet users are relatively less mature in the use of this medium with respect to the European average, but they are rapidly catching up. Broadband access is developing rapidly, although at lower rates than expected, with 10 million users connected at the end of 2007 (up almost 25% over 2006), due mainly to the increasing offer of interactive digital content.

Preliminary estimates assess the Italian telecommunication services market at \$50.5 billion in 2007, a 1.5% increase over 2006 in euro currency. Revenues from mobile services are estimated at \$26.1 billion, a growth of 6.5% in euro currency over 2006, while revenues from fixed line network telecom services are constantly declining and are assessed at \$24.4 billion, a decrease of 3.3%. Mobile voice services are valued at \$19.6 billion (+3%), while traditional fixed telephony services are accelerating their decline, registering revenues of \$19.3 billion (-5%).

Growth in the telecommunications services market is driven by Value Added Services (VAS) and by the considerable development of broadband Internet access technologies. Mobile VAS, including data communication, messaging and Internet services, are the best performing and now represent 25% of the mobile services segment. They are estimated at \$6.5 billion, an increase of 18% over the previous year, while fixed line network VAS (including internet related services, intelligent network services and contact center services) are valued at approximately \$5 billion, an increase of 3% over 2006.

Slowdown in revenues from traditional voice services, both fixed and mobile, is making it essential for operators to launch new value-added services to increase their average revenue per

user (ARPU). The wide acceptance of UMTS technology replacing GPRS/GSM technology has made it possible to develop new services utilizing improved bandwidth. While many business users still utilize smart phones mainly for mobile e-mail applications and, to a lesser extent, for internet access and SMS messaging, most Italian consumers utilize the mobile phone as a true multimedia device, are very open to new services as they become available, and are playing a key role in the development of the mobile VAS market.

The Italian market for VAS is very lively and characterized by more than 13,000 different services offered by more than 500 suppliers, including telecom companies, media companies, the major record and movie labels, and mobile content and service providers. Infotainment services hold the lion's share, with video services expected to become increasingly important. The introduction of HSDPA (High Speed Downlink Packet Access) and DVB-H (Digital Video Broadcast Handheld) technologies will offer both consumer and business users further improved bandwidth and "quadruple play" services (broadband Internet access, television and telephone with wireless service provisions), thus accelerating the convergence of communications and multimedia operators and opening new market opportunities. Other very successful services include instant messaging, download of logos, ring tones, screensavers, wallpapers, true tones, chat and community services and java games.

The Italian broadband market is dominated by xDSL, which is utilized in 96.4% of cases. Fiber optics represents only 3.6%. Wireless Access (WiMAX) technology will be introduced as soon as the winners of the license auction are nominated at the end of January 2008, and are expected to represent an important tool for increasing competition on the broadband market and reducing the digital divide.

For the future, it is forecast that the market will be driven by the following factors: 1) value-added services on wireless and wire-line networks will continue to be a particularly dynamic area, with a focus on news, games and entertainment; 2) quicker, better data and value-added services at substantially lower prices will be offered by an increasing number of competing operators, Mono and multimedia message services (MMS) will prove to be one of the most dynamic components of mobile telephone services; and 3) use of the Internet as a business tool will open up many opportunities, especially in security and value-added services.

Voice and data services over IP are becoming a viable alternative to the traditional Public Switched Telephone Network and they are expected to grow at a constant rate over the next few years.

Opportunities

There are lucrative business opportunities for U.S. companies with technical skills and expertise in Internet applications and services for wireless and fixed line telephony. In particular, there will be excellent prospects for interactive digital content and mobile services in the business-to-business market for internet banking and trading on-line, as well as in the business-to-consumer market for video services, entertainment, publishing, Internet music and videos, bookings for entertainment events, vacation and travel. U.S. technology and standards are highly regarded and the best opportunities for success lie with American companies offering innovative and

sophisticated products. However, it is essential that U.S. companies with no direct presence in Italy team up with well-established Italian firms for partnership agreements.

Resources

- Nicoletta Postiglione, ICT Specialist American Consulate General, Commercial Service
Tel. +39/02/62688-522 (direct phone number) Fax +39/02/6596561
Nicoletta.Postiglione@mail.doc.gov www.buyusa.gov/italy/en/
- Ministry of Communications www.comunicazioni.it/english_version/
- Ministry for Reforms and Innovation in Public Administration - Department of
Innovation and Technologies www.innovazione.gov.it/dit/ (in Italian only)
- CNIPA – National Center for ICT in Public Administration
www.cnipa.gov.it/site/it-IT/Il_Centro_Nazionale/Chi_siamo/ (in Italian only)
- CONSIP – Company for the development and management of public e-procurement
www.consip.it/on-line/Home/Englishversion.html
- Summary of Italy's Data Protection Code
www.garanteprivacy.it/garante/doc.jsp?ID=1030925
- Confindustria Servizi Innovativi - Italian Federation of companies and associations in the
telecommunication, broadcasting and information technology industries
www.confindustriasi.it/_nuovositov1.0/index_.php
- Assinform - Italian ICT companies Association (part of the Italian Industrialists
Association) www.assinform.it/english_version/_profilo_eng.htm
- Assintel - Italian Software and Services companies Association www.assintel.it/

Kazakhstan

Overview

Kazakhstan spent approximately \$565 million on imports of telecommunications equipment in 2007, an increase of 21% from the previous year. As there is almost no domestic production of telecom equipment (except coaxial and fiber-optic cables, and small PBXs), the volume of domestic production is a fraction of market demand. As a result, imports represent 99% of the telecommunications equipment market, with the U.S. commanding a 21% share.

The telecom market is still hampered by a lack of competition, and the majority state-owned Kazakhtelecom and its subsidiaries constitute a de facto monopoly, controlling most of the country's \$1.6 billion telecom industry. As in other developing countries, the cellular segment represents the largest portion of the market (46%), followed by fixed line (27%) and Internet (8%). Accession to the WTO should positively impact this sector, allowing for more foreign investment and reduced rates for users (currently, costs of telecommunication services in Kazakhstan exceed those of the U.S. and Western and Eastern Europe). WTO membership would also allow for growth in this sector, as telephone density is at 20%, and Internet access is only 4-5%.

Best Products/Services

There is a growing demand for telecom equipment and services for mobile, fixed line telephony, cable, broadband, mobile (value-added) data services, digitization of the existing telecommunication networks including digital and/or interactive TV systems working on a

frequency of 40 GHz and more, and all types of Internet-related communication services including Wi-Max and Wi-Fi technologies and equipment, VSAT terminals, DWDM technologies and DECT technologies.

Opportunities

- In 2006, Kazakhstan launched the Alatau IT City, an informational technologies park in Almaty. The IT Park offers a number of projects aimed to improve and develop the IT industry in Kazakhstan and can provide tax and other benefits to firms interested in investing into this sector.
- Kazakhtelecom's New Generation Network Project, to build a new broadband infrastructure based on the IP/MPLS and Metro Ethernet technology.
- In 2006 Kazakhstan launched its own communications satellite. The government of Kazakhstan allocated approximately \$340 million for the development of Kazakhstan's space program, and plans to launch four more telecommunication satellites by 2010.
- A number of e-Government Projects are being implemented in Kazakhstan.
- In 2006 the government approved a program to reduce the country's "informational inequality" by creating a training center for information technology specialists and a Kazakhstani university for informational technologies, which will be developed by cooperating with leading educational and training organizations.

Resources

- Agency on Information and Telecommunications of Kazakhstan www.aic.gov.kz
- Alatau IT City www.aitc.kz/
- Astel www.astel.kz
- BankNet www.banknet.kz
- ICT News www.profit.kz
- Kazakhstan Online www.online.kz
- Kazakhtelecom www.telecom.kz
- Nursat www.nursat.kz
- For more information contact Commercial Specialist Nurlan Zhagarin.

Latvia

Overview

The telecommunications sector has grown rapidly in Latvia during the last decade. In 2002, as an EU aspirant country, Latvia liberalized its telecommunications market through amendments to the Law on Telecommunications. Although the former monopoly Lattelecom remains strong in the fixed line segment, it does not dominate the sector as a whole. The number of mobile telecommunications subscribers exceeded the number of subscribers to fixed line telecommunications already in 2002, and the trend of growing mobile phone use and shrinking

fixed line use continues. After Lattelecom, the largest fixed operator is cable TV operator Baltkom.

Latvia has an optical fiber network that is connected to Scandinavia and Western Europe. The major telecommunication providers are Lattelecom Ltd and JSC Latvenergo. Lattelecom is co-owned by the leading Scandinavian telecommunications group TeliaSonera. The company has digitalized the country-wide telecommunications network and offers an excellent quality of telecommunications. Latvenergo is a member of alliance For Connecting Europe (4cE). 4cE basic network connects Denmark, Germany, Austria, Poland, the Baltic States and the Czech Republic that jointly provide data transmission, voice and video transmission. The strongest sub-sectors of the telecommunications sector are digital lines installation and mobile telecommunications services. The entrance of new operators in the Latvian mobile telecommunications market has brought further development and competition. There are three major mobile operators in Latvia: LMT, Tele2 and BITE. Supported by various new technologies, such as EDGE, GPRS, and HSDPA, Latvian GSM operators offer a wide range of m-payment and e-payment services. Triatel is the only operator that operates in the CDMA 2000 standard. Nokia still holds the position of the most popular cell phone brand in Latvia followed by such names as Siemens, Samsung, and Sony-Ericsson.

Best Products/Services

- Digital lines installation
- Mobile telecommunications services
- Various B2B solutions for telecommunications companies.
- Software
- Hardware
- VoIP accessories
- Accessories for mobile phones.

Resources

- Public Utilities Regulator www.sprk.gov.lv/
- The Ministry of Transport www.sam.gov.lv/satmin/content/?cat=134
- Latvian Investment and Development Agency www.liaa.gov.lv/?object_id=789

Libya

Overview

Telecommunications infrastructure development is the responsibility of the state-owned General Post and Telecommunications Company (GPTC). GPTC was created by Law No. 16 of 1984, and is headed by Eng. Mohammed Qadhafi, a son of the Libyan leader. GPTC oversees the operation of fixed and mobile lines, as well as Libyan Internet service providers (ISPs). GPTC has expanded landline coverage to many parts of Libya, although the quality of its infrastructure and service needs substantial improvement. In 1996, GPTC spun off mobile phone company Al-Madar (“Orbit”) and then launched a second, Libyana, in 2004. Libyana, which offered service at a fraction of al-Madar’s rates, quickly became the provider of choice in Libya, now providing an estimated 4 million accounts (91% of market share). Cell phone penetration is estimated at 75%. GPTC serves as the local service provider for the Thuraya satellite phone

company, including sales of handsets and SIM cards. On the user-side, Nokia currently maintains an estimated 90% market share for cellular and radio communications equipment.

The sector has undergone a number of organizational shifts in the last several years. In 2005, the General People's Committee (GPC) established the General Post Telecommunication and Information Technology Company of Libya (GPTITC), which encompasses Libyana Mobile Phone Company, Al-Madar Mobile Phone Company, Libya for Telecommunication and Technology and General Post and Telecommunication Company. It moved to establish the Communications General Authority (CGA) in late 2006, which supervises all of the above entities and reports directly to the GPC.

In October 2006, the GPTC signed a contract with Alcatel and Sirti valued at an estimated 161 million Euros to upgrade Libyan network flexibility and service reliability known as the New Generation Basic Network (NGBN). In January 2007, Chinese firm ZTE signed a contract with GPTC to supply a CDMA2000 network with a 300,000-line capacity, expected to be deployed commercially in August 2007. In January 2008, ZTE announced a deal with LTT to build a commercial WiMAX network that will cover eight major cities in Libya, including the country's capital Tripoli.

Best Products/Services

- IT technology
- Engineering
- Project planning
- Consulting
- Training.

Opportunities

GPTC has announced its intention to spend \$10 billion on telecommunications infrastructure over the next 15 years. GPTC has also expressed interest in U.S. technology, and U.S.-furnished centers for training and software certification. The privatizations of al-Madar and Libyana could offer opportunities, depending on terms and conditions.

Resources

- GPTC www.gptc-libya.com/
- Al-Madar www.almadar.ly/
- Libyana www.libyana.ly/

Luxembourg

Overview

Luxembourg was slow in implementing the European Directives to fully liberalize the telecommunications sector. P&T Luxembourg's voice telephony and public telecommunications monopoly was abolished on July 1, 1998. Applications for licensing can be obtained from the Institute of Telecommunications - Luxembourg (ILT) at www.ilr.etat.lu/content.html. ILT further forwards recommendations to the Minister of Communications, who ultimately grants or declines applications. Since 1999, nineteen licenses have been granted to a variety of companies covering the fixed telephony, pre-/post-paid mobile, calling card, and Internet markets.

Over the past two years, Viviane Reding, Luxembourg's EU Commissioner responsible for media and telecommunications, has been leading a charge to open up the market to more competition by challenging the monopolistic hold by P&T and by regulating the mobile telephony operators. Consumers have benefited from reduced roaming charges for calls and SMS messages sent within the European Union but outside the consumer's home country. The Commissioner is actively lobbying operators to reduce roaming charges on wireless internet access (such as via BlackBerry devices) and text messaging. As the objective is to deregulate and open up the market once a lower pricing level has been achieved, this represents a good opportunity for market entry by an American provider.

Luxembourg enjoys an average to advanced status in terms of technological infrastructure, specifically fiber optics. The country already offers the capacity necessary to advance business transactions in terms of physical infrastructure and is working to further improve its capacity via LuxConnect, a company launched in 2007 to augment international electronic connectivity via increased bandwidth and state-of-the-art technology. As of summer 2008, high-speed connectivity will be in operation to Amsterdam and Frankfurt, with Paris to follow at the end of the year. U.S. internet and e-commerce companies can greatly benefit from this upgraded infrastructure upon market entry.

Luxembourg is expanding the available bandwidth from 256KB downstream to 1MB, which quadruples the broadband speed. The national telecommunications provider, P&T, has a slogan; "fiber to the home, office, and building..." which it adopted because of the country's large infrastructure of fiber optic cables connecting offices, buildings, and most homes to the Internet.

Opportunities

One area that has emerged as a new technology in telecommunications is Voice-over-Internet Protocol (VoIP), thanks to Skype, a company launched in Luxembourg but acquired by eBay in 2006. Luxembourg is developing VoIP to decrease dependence on both landlines and mobile phones. One of the latest developments in ICT, VoIP allows the user to keep open "telephone type" communication lines over the Internet. In Luxembourg, this technology is currently used within companies and continues to be developed for further expansion throughout the Grand Duchy.

There is a growing market for suppliers of PBX, Private Branch Exchange, in Luxembourg. PBX is the name for the private telephone system used within an enterprise. It is used within most medium-sized and larger companies because it is more convenient and less expensive than connecting an external phone line to every telephone in the organization.

The market for developing Internet video conferencing and Voice-over-Internet Protocol (VoIP) is growing rapidly in Luxembourg. 'Net telephony' technology is a growing market with Skype as market leader, as said above. Skype's unique 'peer-to-peer' networking connects users of the Internet telephone system without a central server and has set the company apart from its competitors.

Companies offering "electronically supplied services" (ESS) to European customers can benefit from establishing a European base in Luxembourg. As of July 2003, all non-EU based

companies offering ESS to customers inside the European Union must apply a Value Added Tax (VAT). The VAT rate is applied in the country where the customer resides for non-EU based companies, or the country of the supplier's residence for EU based companies. By establishing a corporate base in Luxembourg, a company can apply Luxembourg's low VAT of 15%, the lowest in the European Union but only through 2014, following reform to the directive made by the EU EcoFin Committee in December 2007. The VAT will gradually be split between supplier and consumer countries starting in 2015.

- Electronically supplied services refer to all television and broadcasting services and online services including: downloaded software, music and images, online news services, publications, games, education and entertainment services.
- Examples of U.S. companies who offer "electronically supplied services" and have established their e-commerce base in Luxembourg: AOL est. 2003, Amazon; Apple iTunes Music Store est. 2004, Digital River; PayPal (eBay) est. 2006

There is a need for companies to supply integration services for wiring and networking within Luxembourg. There are currently many tech companies that are operating from Brussels who could benefit financially and physically from operating out of Luxembourg, but are currently unaware of the benefits Luxembourg offers and have trouble servicing customers in Luxembourg.

Manufacturers of high-tech products like cell phones and computers can benefit from Luxembourg's efficient transportation network and the country's population of 'early-adapters.' Luxembourg's efficient and large transportation network allows high-tech manufacturing companies to utilize the lowest cost alternatives in their production processes. Luxembourg's transportation industry gives high-tech manufacturers the opportunity to ship their products throughout the world during each stage of production to maximize a low-cost production strategy. Companies can benefit from lower costs of labor in the Eastern European and Asia regions for the initial manufacturing stages and benefit from the highly skilled labor market in Luxembourg to complete the production process with Value Added Logistics. Thus, the product is completed at the center of the European Market and is readily accessible for sale.

- A key player in Luxembourg's transportation network is Cargolux, the country's air-freight airline. Cargolux benefits from the geographic location of Luxembourg in the center of Europe, from Luxembourg's non-saturated and now expanding Findel airport, and from the country's strong trucking industry.
- Luxembourg's population of 'early-adapters' to new technology offers companies a capable workforce, especially in the field of adding final details, called Value Added Logistics, to high-tech products.

Resources

- The Lisbon Strategy
- CEPROS; report on ICT industry in Luxembourg www.cepros.net/pdf/cepros_isc2.pdf
- Mediaport Luxembourg; The Luxembourg government media and communication development agency www.mediaport.lu

- European Commission; most recent proposal for simplifying VAT obligations for EU-based companies
europa.eu.int/rapid/pressReleasesAction.do?reference=IP/04/1331&format=HTML&age d=0&language=en&guiLanguage=en
- AMCHAM Luxembourg; American Chamber of Commerce in Luxembourg Margot Parra, Marketing Director Email: parra@amcham.lu www.amcham.lu

Malaysia

Overview

Overall, the telecommunications sector continues to be a key growth area for the next few years. Both the wire-line and wireless telecommunications equipment and solutions will be greatly in demand. Malaysia realizes that it needs to increase its broadband penetration rate in order to achieve its vision of becoming an industrialized nation by year 2020. The Government's latest target is to have two million Malaysian households with broadband access by 2010. As of September 2007, Malaysia's broadband penetration rate stood at 4.5% out of population of 27.3 million. This is about a 14% household penetration rate. There are about 5.9 million households in Malaysia. Internet dial-up penetration rate for the same duration is 14.3%. About 80.8% of Malaysians own a mobile phone. Out of this population, 83% are prepaid users. Fixed-line/ wire-line telephony penetration is at an all time low of 15.9 per 100 inhabitants. If past statistics are an indication, fixed-line penetration will continue to decline in the future.

Technologies adopted for broadband access are: ADSL, SDSL, wireless, wireless LAN, and satellite. The major broadband subscription growth area is in wireless, wireless LAN and ADSL. There is a slight increase in SDSL technology deployed, but not on the satellite front. As of the third quarter 2007, broadband subscriptions by technology are: 2.5% wireless, 21% wireless LAN, and 76% ADSL, 4.9% SDSL, and 0.2% for satellite.

Based on 2008 GOM budget allocation, \$92 million have been allocated to the Technology Fund, \$71 million for the science fund, \$168 million to research institutions. The government is also setting up two new entities to drive the supply of highly skilled ICT workers. This first is named the Knowledge Workers Development Institute, and the second entity is named the Multimedia Super Corridor (MSC) Malaysia Digital Animation Center. To encourage a more rapid broadband deployment and uptake, various tax exemptions will be given on broadband equipment and consumer access devices in 2008.

Best Products/Services

- WiFi, WiMAX, VoIP, FTTH and wireless last mile access technologies
- Network firewalls
- Wireless access points
- IP camera surveillance equipment
- In the longer term, Radio Frequency Identification (RFID)

Opportunities

- The Government of Malaysia (GOM) will be providing 5000 WiFi hotspots in at least 25-35 major cities and towns in Malaysia free of charge for two years with broadband speeds

of at least 384Kbps. Public-private sector funding partnership is the business model identified by GOM for this WiFi broadband access project. It is the GOM hope that 50% of the population will be broadband enabled by 2010.

- Four Malaysian WiMAX licensees are getting ready to deploy their services. Base stations and wireless access controllers are some of the equipment needed for implementing wireless Internet access.
- TM Bhd had been awarded the project to lay fiber optic cables to major urban areas. GOM will bear one third of this \$4.7 billion Fiber to the home (FTTH) project that will be rolled out over ten years. This would include fiber optic last mile connectivity, core network and improvements to international connectivity.

Resources

- World Congress on Information Technology www.wcit2008.org
- Commercial Service web cast on ICT sector www.buyusa.gov/malaysia
- Malaysian Communications and Multimedia Commission www.mcmc.gov.my
- Ministry of Energy, Water and Communications www.ktkm.gov.my
- SIRIM Bhd www.sirim.my
- For more information contact Commercial Specialist Tracy Yeoh.

Mexico

Overview

The fixed and mobile markets in Mexico have enjoyed constant growth over the years, more than doubling GDP growth. Fixed lines have reached over 20 million users, and mobile communications today have over 56.5 million subscribers. Telecommunications services are becoming more readily available due to the increased penetration of fixed lines, lower rates and an explosive growth in the wireless subscriber base. Cable TV and wireless industries will be more aggressive and will show strong innovations in the near future. Technologies such as PLC, WiMAX, WiFi, and cable will be the tools for increasing penetration and offering newer services.

The industry sees the coming of more mobility in the country along with smarter devices. The entire ICT industry grew to an estimated value of \$38Bn, where telecommunications equipment represented about 20% or approximately \$7 billion. In Mexico there is a diminishing trend, however, in organic growth. As the fixed and mobile service markets tend to mature, growth will be decreasing over the next five years. Today Mexico has about 65 million wireless subscribers and over 20 million fixed lines. Growth in both services will tend to flatten in upcoming years. It is expected that mobile lines will reach its maximum at 85 million subscribers, and fixed lines will tend to grow marginally. Expert organizations had set 25 million lines as the recommended penetration but this is unlikely to happen given the cannibalization by wireless lines.

Growth for telecom equipment vendors is residing more in niche markets such as VoIP for telecom carriers and CATV operators. They are also seeking new and improved equipment in order to replace the current installed base. Additionally, equipment vendors are seeking new and

untapped markets in Mexico such as communication solutions in vertical transportation markets such as subways, railroads, light rail, airports and marine ports.

Best Products/Services

Best products will remain in the convergence area. Following are the main sub-sectors where a majority of new acquisitions will be focused. Each offers great opportunities for American companies to participate in the Mexican IT & Telecom market during 2008:

- **CATV:** Cable Television companies are rapidly expanding and are now legally able to offer telephone services on their own. Today there are various carriers offering Triple Play Services in about 30 cities. The Pay-TV industry in Mexico is experiencing strong growth with large untapped potential. Over 90% of Mexican households have at least one TV set, and Pay-TV penetration of TV households is only about 18.5%, clearly a good opportunity for industry players. The market has 3 technologies: Direct To Home (DTH) with Sky as the only operator, MMDS with MVS Multivision as its only service provider, and Cable which a large number of companies use. The main companies are MVS, Sky, Cablemás, Cablevisión and Megacable.
- **Wireless:** Wireless technologies and applications for corporate and personal uses are the hot topics today. WiFi, and the future WiMAX, will provide flexibility and lower cost for connectivity. It is expected that in 2008 the government will set out a bid for the different spectrum allocation in the following bands: 1.9 megahertz (PCS) for wireless services and 3G Internet access; 3.4 – 3.7 gigahertz for WiMAX; and 1.7 – 2.1 gigahertz for broadband wireless services.
- **Mobile Services:** Mobile communications will still be the main growth industry in Mexico. Mobile operators are experiencing strong growth but are looking for new technologies to generate additional revenue. It is expected that in 2008 the government will set out a bid for the different spectrum allocation in the following bands: 800 megahertz for trunking services; 2.5 megahertz for high-speed Internet services.
- **High Definition Equipment:** Mexico recently approved a new broadcasting law, which will motivate investment in HD equipment by TV and Radio broadcasters. Mexico has adopted U.S. ATSC HDTV Standards.
- **Network infrastructure:** Driven by a gentle opening of the market to competition, convergence and other market forces, we see significant investment in expanding and upgrading fixed-line networks. This will translate to further deployment of networks and improved technologies. The national utility company, CFE, is today a licensed carrier-of carriers by offering its extensive network as an alternative for transport to telecom operators. VoIP: Most carriers are focusing exclusively on IP-based networks. VoIP is growing in demand and will continue to expand into small and medium-size businesses.

Opportunities

The greatest opportunities for 2008 in the Telecom Equipment Sector are in:

- Security appliances
- ERP and CRM software for Small and Medium Enterprises
- Mobile applications
- Broadband applications
- Power Line Communications
- VoIP applications
- IPTV applications
- WiMAX equipment

Resources

- Select, IT & Telecom consultancy firm www.select.com.mx
- Comisión Federal de Telecomunicaciones – Telecom Regulator www.cofetel.gob.mx
- Cámara Nacional de la Industria Electrónica de Telecomunicaciones e Informática
www.canieti.org/
- Telecom Research Consortium telecom.cide.edu/home.html
- Mexico Census Bureau of Statistics www.inegi.gob.mx/inegi/default.asp
- Servicio de Administración Tributaria (SAT) Ministry of Internal Revenue
www.sat.gob.mx/nuevo.html
- Government Procurement www.tramitanet.gob.mx/
- AMIPCI – Asociación Mexicana de Internet (Mexican Association of Internet)
www.amipci.org.mx/
- CANITEC – Cámara Nacional de la Industria de Televisión por Cable
www.canitec.org/

For more information on the telecommunications sector in Mexico, please contact:

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Montenegro

Overview

The telecommunications sector is probably the most dynamic component of Serbia's economy, and definitely one that is receiving priority attention from the government. The telecom sector already contributes around 2% to Serbian Gross Domestic Product (GDP) and is growing fast. Over the last five years, it has experienced impressive growth, offering Serbia the latest technologies in most branches of telecommunications. Although the telecom sector has a high annual growth rate of 18.3% and projected 5-year compounded annual growth rate of 16.8%, its further development to reach the level of developed economies requires urgent improvement of regulatory environment. Expected changes in the regulatory and business environment in the next two years will bring greater than average value growth. The dominant telecom company in

Serbia is Telekom Serbia. The most current statistics (mid 2007) indicate that Telekom Serbia has 2,700,000 fixed line subscribers. Around 90% of the fixed line telephone networks have been digitalized. In Serbia, telephone penetration has reached an average 85.0 lines per 100 inhabitants.

During the last five years, mobile telephone services have developed rapidly in Serbia. The average annual increase in mobile subscribers is 50%. At the end of 2006, the country's total number of subscribers exceeded 7.5 million subscribers. This figure is expected to reach eight million by mid 2008. Serbia's mobile penetration is estimated at 70%. Telenor (acquired domestic operator Mobtel in 2006), Mobile Telephony of Serbia (MTS), the mobile phone arm of state telecom provider Telekom Srbija, and Mobilkom Austria (recently was awarded third license) share the mobile market in Serbia. They are strongly competing in the introduction of new technology and new high-profit value added services. Significant opportunities for U.S. companies in this sector will be influenced by privatization of the telecom sector and need to modernize existing, and in some areas obsolete, equipment.

State telecom provider Telekom Srbija, which currently has 4.15 million subscribers, plans to increase the figure to over 5 million by 2008. Telekom has more than 600,000 post-paid customers but its goal is to double the number because post-paid users are a more reliable source of revenue. The company launched Serbia's first 3G network and already has 20,000 users, approximately 2,000 video calls are made each day. Telekom Serbia has invested heavily in modern data networks, and its mobile operations unit is gaining market share. The company returned to profitability in 2005 and 2006. Tariff rebalancing will provide a substantive boost, as 80% of traffic is domestic. Reduction in tariffs on international calls will not negatively impact profitability as most international calls have been switched over to VoIP over the past year. Transmission facilities are comprised of a national and international backbone consisting of about 3,000 km of optical cables for digital transmission systems with 2.5 Gbit/s and 622 Mbit/s capacities.

The rapidly growing cable television sector also provides opportunities for investment. There are telecommunications equipment manufacturers with innovative solutions for the particular problems of undeveloped countries: low-cost solution for line doubles (party lines); low cost small scale digital exchanges; home grown ADSL solutions, etc. Mostly European companies are present in this sector (Siemens, Alcatel, Ericson), while there is enough space for U.S. products presence.

U.S. telecommunications equipment is very well received in the Serbian market. U.S. telecommunication equipment manufacturers represented in Serbia include Hewlett Packard, Cisco, Juniper, 3Com, and Bay Networks. However, European producers such as Siemens, Ericsson, Nokia and Alcatel heavily dominate the Serbian market.

Best Products/Services

- Internet-related equipment such as routers, switches, access servers
- Equipment for mobile telephony
- Cable operators
- Equipment for transmission and fixed wireless equipment.

There are also lucrative business opportunities for U.S. companies with technical skill and expertise in Internet applications. In particular, as GPRS usage becomes widespread and UMTS cellular telephony is introduced, there will be good prospects for the business-to-consumer market for publishing via Internet.

Opportunities

Significant opportunities for U.S. companies in this sector are related to the modernization of equipment, but competition is fierce, mostly from European companies, as stated above. Three other major factors contributing to market growth are the continued increase in Internet users, the substantial increase in mobile phone use, and the increase of services offered by the cable TV operators, private radio stations and TV broadcasting operators. These factors should help create expanded demand for U.S. providers of advanced telephone service solutions, as well as value-added telecommunications services. Other best prospect sub-sectors include Internet services, wireless and broadband Internet access technologies, cable television, and voice-over-Internet.

Resources

- Ministry of Telecommunications and Information Society www.mtid.sr.gov.yu/
- Telecom Serbia Mr. Drasko Petrovic www.ptt.yu
- Serbian Agency for Telecommunications (RATEL) www.ratel.org.yu

For more information on market entry strategies contact: zorica.mihajlovic@mail.doc.gov

Nepal

Overview

In the last five years, telecommunications services in Nepal have witnessed significant growth. Currently, there are four companies providing telephone services in Nepal. Of the four, the government-owned Nepal Telecom is the biggest operator. The other three companies, a U.S.-Nepal joint venture, a Russia-Kazakhstan-Nepal joint venture, and an India-Nepal joint venture are operating in very limited geographical areas. Nepal Telecom is fast expanding its geographical reach and range of services, which offers excellent investment potential. Local microwave and cable TV services depend on U.S. firms for much of their equipment, as do Kathmandu's eighteen satellite/cable TV networks. Due to Nepal's rough topography, satellite services for phone and internet will likely find a market in Nepal.

Best Products/Services

- Switching equipment
- Radio and transmission equipment
- Telephone sets
- Videophones
- Networking equipment.

Opportunities

Nepal Telecom has established a mobile telephone service, is expanding its landline phone system, and will continue to issue tenders for optical fiber lines, digital switching equipment, and telephone sets. Under the GON's plans for commercialization and privatization, Nepal Telecom was converted into a public limited company in June 2004, but the GON still owns one hundred% of shares. Although the GON has plans to disinvest 49% of the company, it has not

yet set a timeline. When available for privatization, Nepal Telecom represents an excellent investment opportunity for U.S. companies. The World Bank has an ongoing telecommunications sector reform project, which might provide opportunities for U.S. companies.

Resources

- Nepal Telecom sugat.kansakar@ntc.net.np www.ntc.net.np.
- Ministry of Information and Communications Tel: 977-1-4242562; Fax: 977-1-4227310
- Nepal Telecommunications Authority info@nta.gov.np, ntra@nta.gov.np
ntra@wlink.com.np www.nta.gov.np.

For further information and assistance, businesses may contact the Commercial Specialist at U.S. Embassy Kathmandu, Mr. Tapas Gupta at GuptaTK@state.gov.

Nicaragua

Overview

América Móvil of Mexico purchased the Nicaraguan Telecommunications Company (ENITEL) in 2004 and has since invested heavily in the development of land-based and cellular telephony. In 2008, ENITEL's cell phone division Claro introduced a third-generation (3G) all-digital network to support high-speed data transmission. Spanish company Telefónica operates the competing Movistar cell phone network. There are 247,862 conventional phone lines installed in Nicaragua as of December 2007. Cellular phones have by far surpassed land lines, up from 500,000 users in 2004 to 2.12 million as of December 2007.

Best Products/Services

Sales opportunities exist for virtually all categories of products in this sector. The most promising sub-sectors in the telecommunications market are:

- Digital, cellular and wireless telephone systems
- Data transmission equipment
- Fiber optic networks.

Resources

- TELCOR (the telecommunications regulator) www.telcor.gob.ni
- Nicaraguan Council of Science and Technology www.conicyt.gob.ni
- Nicaraguan Internet Association www.enicaragua.org.ni
- Student's Association of Telecommunication and Information Technology
www.anetic.org.ni
- Nicaraguan Association of Telecommunication and Information Technology's Specialists
www.aneti.org.ni

Niger

Overview

U.S. equipment is likely to be competitive as the telecommunications system is restructured, modernized and extended. Sonitel, Niger's telecommunications operator, continues to dominate the market. Sonitel was privatized in November 2001 when controlling interest was sold to Dataport, ZTE/LAAICO, a Chinese-Libyan joint venture, owning 51% of capital. Liberalization of some services accompanied privatization. Sonitel requested bidding for a modernization of its domestic satellite connections. After an extended delay a company was selected to fulfill the bid for this equipment under circumstances that did not appear to follow open and fair competitive business practices, in particular as regards meeting the technical specifications outlined in the tender announcement.

Three companies now provide cellular telephone services, and there is a competitive Internet services market. As a result, there has been a boom of Internet-related activities and services and in cell phone usage; although internet usage remains low compared to other countries. The French telecommunications company Groupe Orange was awarded a license for land line, cell phone, and internet usage. Services are expected to begin in mid 2008. Since December 2004, the Sonitel monopoly ended and all companies are now able to compete equally. In addition to the three cell phone companies, SahelCom, Celtel and Atlantic Telecom Niger Moov, already operational, one license has been granted for Wireless Fidelity Internet service. The company that received this license, Afripa Telecom, provides satellite Internet services via a technology known as Very Small Aperture Terminal (VSAT). Future growth areas may include Internet services, digital switching technology, satellite services, and cellular phones.

Resources

- www.ne.celtel.com/fr/index.html
- www.gsmworld.com/roaming/gsminfo/net_netl.shtml
- www.telecelniger.com/services/telecel.htm
- www.wtng.info/wtng-227-ne.html
- www.gsmworld.com/roaming/gsminfo/net_nesa.shtml
- www.intnet.ne/
- www.iana.org/root-whois/ne.htm

Nigeria

Overview

According to the NCC, the estimated total number of phone lines (both mobile and fixed line) in Nigeria at the end of September 2007 was 46.23 million and teledensity of 27.42. This is an improvement from the December 2006 figure of 34.01 million lines and teledensity of 24.29. A report tagged, "Q4, 2007: How the Nigeria Telecoms Market Stands", published by Technology Times, showed MTN leads the market with about 15,873,000 lines or 38% of the total market, followed by Glo Mobile with 12,385,959 lines or 30% of the market and Celtel with 11,088,500 lines or 27% of the market. Mtel, the former national flagship now owned by Transcorp Corporation Plc, lags far behind with only about 176,000 lines, while the remaining lines are shared among several CDMA and fixed/fixed wireless operators.

In July 2007, three carriers in the 800MHz spectrum band were awarded to Visafone communications in a competitive auction process that included three other companies namely GiCell Wireless Limited, Multilinks Telecommunication Limited, and TC Africa Telecoms Network Limited. Also in March 2007, four licenses for a 10MHz lot in the 2GHz spectrum were issued to Alheri Engineering Co. Limited, Celtel Nigeria Limited, Globacom Limited, and MTN Nigeria Communications Limited. The NCC commenced the unified licensing regime in May 2006, awarding the first batch of unified licenses to four telecommunication service providers. The unified license permits telecommunications companies to offer services across the board in telecommunications, including fixed line, wireless, data services, etc. This marks the end of the five-year exclusivity incentive granted the mobile telephone licensees in 2001.

Telecommunications deregulation has led to the issuance of licenses for fixed wireless networks, internet services, and VSAT (very small aperture terminal) satellite telecommunications equipment services. However, the GON's hefty fees and opaque The NCC held a stakeholder forum to discuss its proposal to facilitate setting up of a national emergency communications system and the introduction of a 3-digit emergency communications code for Nigeria. The project estimated to cost \$24.72 millions will see the emergence of community-based call-handling centers which will act as intermediaries between those needing emergency assistance and telecommunications operators as well as security and associated agencies such as the fire service and hospital. For more information about telecommunications regulations and NCC, visit www.ncc.gov.ng

The Association of Telecommunications Companies of Nigeria (ATCON) said that the total investment in the telecommunications industry is about \$8.5 billion. Annual investment is projected at \$6 billion over the next 5 years. Nigeria liberalized its telecommunications market in 1998, and sold its cellular mobile license in 2001. For more information about ATCON, visit www.atcononline.org/

On September 27, 2003, Nigeria joined the league of nations with satellites in space. The National Space Research and Development Agency (NASRDA) began an earth observation satellite project in 2000 following a collaborative agreement with Surrey Satellite Technology Limited of the United Kingdom. The success of the program emboldened the agency to embark on the NIGCOMSAT-1, which was launched on May 14, 2007. A strategic alliance with some U.S. firms has resulted in NASRDA initiating a pilot project on telemedicine, tele-education and video conferencing. These national ICT infrastructure programs are coming on the heels of public-private partnerships to build ICT centers in Nigerian universities and polytechnics.

On December 4, 2007, *Technology Times* reported that MTN Nigeria and Celtel Nigeria have completed preliminary network upgrade to deliver 3G services in Lagos and other major commercial cities in Nigeria. MTN Nigeria has since that report embarked on media promotion of its proposed 3.5G services. A number of cellular mobile and fixed wireless operators are pursuing ambitious expansion plans and many of them are either concluding or initiating merger plans in order to improve their equity investment and working capital. Reportedly, Celtel plans to spend about \$2.5 billion to increase its business in Nigeria. This will bring its total direct investment in Nigeria to \$2.5 billion. In June 2006, the MTC Celtel Group paid \$1.1 billion to

Vee Networks (operators of Vmobile Nigeria) to acquire 65% of its equity share. After the takeover, the group changed the name Vmobile to Celtel.

In an international press briefing, Celtel's Chief Executive Officer declared that his group was poised to make history in Nigeria and in other African countries where it is operating at the moment. Over the past year Nigeria has witnessed an aggressive influx of Asian firms into the telecommunications market. Several of these companies are partnering with local private providers and are offering financial incentives targeted at equipment import, leasing and training. As the end of 2006 Nigeria had installed over 34 million fixed and mobile phone lines, according to market watchers and the Nigerian Communications Commission (NCC). In terms of value-added services and customer support, the unified licensing regime announced on March 1, 2006, by NCC has not had much market impact. However, the new regime has taken effect following expiration of the exclusivity granted the four pioneers of mobile telecommunications services in Nigeria from March 2001 to March 2006. NCC had stated that it would not renew the exclusivity agreement it signed in 2001 with MTN Nigeria, Vmobile, Nigerian Telecommunications Limited (NITEL), and extended to Globacom in 2003. According to an industry and market survey conducted in 2005 by eShekel Nigeria, a leading telecommunications research firm, the 23 private telecommunications services providers (private operators as they are commonly called in Nigeria) that are qualified to participate in the unified license regime will need no less than \$69 billion for various investments related to provisions of mobile services.

In 2004, the International Telecommunications Union (ITU), described Nigeria as one of the fastest growing telecommunications markets in the world. For the African continent, Nigeria is easily the market to beat and certainly the chief driver of telecommunications trade and investment in the West African sub-region. At the inception of cellular mobile telephony in Nigeria in 2001, the country could boast fewer than 500,000 functional wireless and fixed telecommunications lines. Competing operators were selected through a public auction in January 2001. Four firms successfully concluded the auction but only three met the mandatory deadline for payment of the license fee of \$280 million each. The successful firms were Econet Wireless (now known as Vmobile Nigeria Limited), MTN Nigeria, and NITEL, the Nigerian government-owned telecommunications parastatal. Econet Wireless and MTN both launched their services in August 2001. NITEL began skeletal services using its associate, M-Tel in Abuja, the capital city. The Nigerian mobile networks operate in the GSM900 MHz and GSM 1800 MHz frequencies.

Nigeria licensed and launched a Second National Operator (SNO), Globacom Mobile Limited, in 2002. The SNO has a bundle of licenses to provide services related to wireless telecommunications, including digital mobile (GSM), fixed-line services, data, Internet and IP services, business and carrier solutions. The second national operator or carrier is expected to provide national and international gateway services in competition with the former Public Switched Telecommunications Network. Pursuant to deregulation programs, Nigeria reviewed its telecommunications policy, first published in October 1999, and issued operating licenses to several private operators in the 350 MHz frequency range for zonal, regional and/or community telephony. Currently, there are over 30 private telecommunications operators in Nigeria using variants of GSM and CDMA technologies and equipment from the U.S., Europe and Asia.

The Nigerian Communications Commission (NCC) is the industry's regulator. NCC has approved more than 510 operating licenses and permits for various telecommunications services across the country, including over 50 Internet service providers. This has generated demand for telecommunications equipment, accessories, consulting and technical partnerships. The replacement of Nigeria's outdated telecommunications infrastructure through both multilateral and Nigerian funding is a priority program of the Nigerian government. For more information about NCC, refer to www.ncc.gov.ng

The market reforms that started in 1993 have unleashed private sector-led innovations that are generating demand for telecommunications equipment, accessories and services. Topping the list of equipment are digital and mobile phone sets; cellular, transmission and switching equipment; 220V PABX and voicemail facilities. Services such as Internet cafés, voicemail, and prepaid calling cards are exploding in Nigeria.

Best Products/Services

- The best prospects in mobile telecommunications services include:
- Banking and financial service support technology and systems
- Value-added services such as equipment rentals
- Consulting services
- Training programs

Opportunities

Interested U.S. service providers should target wireless applications, rural and community telephony, local and wide area network design and management, spectrum management, transaction management using wireless applications, data network design and performance optimization, Internet and Intranet security services, electric and alternate power-supply services, and deployment and strategic marketing of wireless solutions. There are also opportunities in consulting services and training in project management and corporate leadership in this sector. Nigeria is a strategic gateway to other West African markets and offers U.S. firms a tremendous growth opportunity that may be difficult to equal or exceed elsewhere. ECOWAS, the 16-member body of West African countries, recently adopted a common currency known as Eco and share a common tariff, moving to final stages of implementation. Interested U.S. firms should take advantage of CS Nigeria's Networking with the USA (NUSA) program and BuyUSA (www.buyusa.gov/nigeria) to enter this market – the largest and most robust in Sub-Saharan Africa.

Resources

- www.ncc.gov.ng, www.buyusa.gov/nigeria
- www.Nig.org.ng
- For further information, e-mail Anayo Agu, Senior Commercial Specialist, U.S. Commercial Service, Lagos, Nigeria anayo.agu@mail.doc.gov
- For more information about Technology Times reports, visit www.technologytimes.com.ng

Norway

Overview

The market for telecommunications has declined some from an activity peak in 2005, but is still considered strong and offers great opportunities for companies with state-of-the art technology. Norway has the world's highest mobile telephone density with more than 100% subscription/SIM card coverage. The country has also a very well established telecommunications infrastructure that supports and carries Internet access to some of the most remote parts of Europe. Mobility is a major driver in the Information and Communication Technologies (ICT) market. The largest service providers have traditionally been reluctant to launch the latest in content and services, and rather capitalize on traditional traffic with high margins. It is anticipated that this situation will change in 2008, as competing 3G standards give users more flexibility. Data traffic grew 300% in 2007.

Best Products/Services

- **Cellular technology:** The demand for wireless data connectivity is increasing as high-speed, high-quality infrastructure equipment provides better UMTS/3G. A CDMA network, launched in 2006, merged broadband Internet and cellular phone technologies. The adaptation of high speed cellular connectivity was slower than anticipated between 2000 and 2006, and the large telecom service providers were reluctant to open up for input from the outside. Telecom infrastructure investments also peaked in 2005, and imports declined the following year. Consequently, a technology gap developed with infrastructure outperforming applications. This is about to change as service providers now leverage from earlier investments and existing networks. Competent application software, along with systems and security solutions are in demand when information is transferred "real time". The business segments seem to drive this development in Norway.
- **Workforce Mobility:** There is an increasing need for data connectivity in the small business sector, traditionally translated into LAN hardware. Increasingly, businesses are employing email synchronization over 3G. The critical drivers of small business networking will need to improve management of a growing number of PCs and share access to the Internet. Wireless IP zones at airports, hotels, etc. are now common, providing a more efficient workday for mobile employees. Together with GSM, GPRS, CDMA, WIMAX and UMTS, all components should be in place for improved business applications. Mobility solutions of this kind were considered a mega trend in 2006 according to the Gartner Group. Push-services are now mainstream, with Blackberry entering the market in 2006. Open source solutions are increasingly popular. A CDMA 450 license was awarded to Nordisk Mobiltelefon AS in 2004. This relatively low bandwidth, but long-range 3G communication vehicle, both provides broadband to rural areas and introduces new services in the market. U.S. vendors using CDMA 450 technology may find opportunities moving forward. The competing GSM-standard was largely invented in Norway.

- **IP Telephony:** Telenor ASA, Norway's largest telecommunications company has been developing broadband capacity through four channels: copper terrestrial network, coaxial cable, digital ground-based broadcasting network and digital satellite distribution. Other infrastructure companies offer connectivity via cable television networks, satellites or optical cables all the way to end-users in major cities. Increased bandwidth has finally made IP telephony a mature and reliable technology. The private market for IP telephony expanded rapidly between 2004 and 2007. Major players now share the pie and smaller providers consolidate. Penetration in the business market takes lead time due to complex set-ups and higher security needs. Local analysts claim this may be a result of focus on the rapid development and urgent need to move in the private market. It appears that the B2B IP telephony market has a better growth potential, with more complex solutions than the private market.
- **Wireless LAN in cities:** A few Norwegian cities are in the process of designing and implementing local area networks as a low-cost commodity to citizens in downtown areas. Norway's second and third largest cities, Bergen and Trondheim, are both in the forefront of this development. This is expected to take revenue from the traditional Internet service providers.

Opportunities

There are opportunities to enter telecommunications services as value-added service providers. Safety-related software is particularly in demand. Historically, the safest way to enter this arena is to enter into a partnership with a local company or a network license holder. This is true for both the terrestrial and wireless networks. There are also possibilities to provide services directly to the end-users.

Resources

- The Ministry of Transport and Communications
www.regjeringen.no/en/ministries/sd.html?id=791
- The Norwegian Post and Telecommunications Authority (Monitoring and regulatory responsibilities for the postal and telecommunications markets in Norway.) www.npt.no
- The Ministry of Government Administration and Reform
www.regjeringen.no/en/dep/fad.html?id=339
- ICT Norway (Norway's largest IT-organization with over 320 members)
www.ikt-norge.no
- Abelia (Association of Norwegian ICT- and knowledge based enterprises, associated with the Confederation of Norwegian Enterprise) www.abelia.no

Panama

Overview

The telecommunications sector in Panama was privatized in 1998. The government owned Telecommunications Company (INTEL) was converted into a corporation. Forty-nine percent of its shares were sold to the British firm Cable and Wireless and two percent to the telephone workers union. Cable and Wireless improved and broadened services, digitalized all switching stations and upgraded transmission lines to the latest technology. On January 1, 2003 all fixed line telecom services in Panama were fully opened to competition and a number of licenses were issued at a nominal fee. Both the privatization and the increased competition provide new market opportunities for U.S. exporters of telecommunications equipment. There are over 500,000 fixed telephone lines in the country, and more than 1.5 million cellular lines, giving Panama one of the highest teledensity rates in Latin America. Main competitors in the market are the United Kingdom, Japan, Sweden, France and Canada.

Best Products/Services

- PABX systems
- Radio trunking systems
- Satellite-based telecommunications facilities
- Wireless systems and fiber optics cable.

Opportunities

In 2008, two new cellular operators will be allowed to enter the market. The telecommunications authority is currently evaluating the proposals submitted by the interested companies. Up to now, only two operators (Telefonica and Cable & Wireless) were allowed in the market. This will bring new opportunities for U.S. companies.

Resources

- Telecom Regulatory entity: www.asep.gob.pa
- Government Scientific/Technology Organization: www.senacyt.gob.pa
- CS Trade Specialist: Enrique.Tellez@mail.doc.gov

Paraguay

Overview

Telecommunications is potentially a key sector for investment in Paraguay, although COPACO, the state-run telephone company, would need to be reformed in order to fully realize that potential. There are five phone lines per 100 inhabitants, and an estimated unmet demand of almost one million lines. The inefficiency of COPACO has been a bonanza for private mobile communications operators, and investment in the mobile sector has been strong. There are 1.2 million mobile phone accounts, compared to only 300,000 fixed lines. With respect to the table above, reliable estimates of the size of the market are not available, and the available Paraguayan trade data is too general for use for specific line-items.

Best Products/Services

Mobile phone service, expanding internet services, and eventually greater land line coverage are the most likely areas of future growth.

Opportunities

Contingent on further opening of COPACO's monopoly of international and basic telephony, which is possible, but not highly likely, in the short term.

Web Resources

- Paraguayan national telecom. regulatory agency: www.conatel.gov.py/
- Paraguayan state-owned telecom. company: www.copaco.com.py
- Paraguayan public contracting office: www.contratacionesparaguay.gov.py
- Paraguayan importers trade association: www.cip.org.py
- Paraguayan Central Bank trade statistics: www.bcp.gov.py/gee/comerc.htm
- Paraguayan-American Chamber of Commerce: www.pamcham.com.py
- U.S. Embassy Asuncion commercial assistant: <mailto:schaererb@state.gov>

Peru

Overview

Peru's telecommunications infrastructure has undergone significant expansion and improvements in the quality and diversity of its products in recent years largely as a result of the entry of substantial levels of private investment, much of it from abroad. During 2007, the telecom continued to offer new technologies and services and experienced reductions in tariffs for a number of services. The areas with the telecom sector exhibiting the greatest dynamism in recent years have been the mobile-phone system, Internet and cable TV.

Best Prospects

The market for mobile-phone services has grown rapidly in Peru in recent years, not only in terms of number of phone lines available, but also in quality and geographic coverage of service. Still, cell phone penetration rates in Peru lag behind those found in many other Latin American markets. The figures below represent each product's share of Peru's total imports in this sector.

HTS Code	Description	%
85170000	Electrical apparatus for the telephony or line telegraphy, including line telephone sets with cordless handsets and telecommunication apparatus for carrier-current line systems or for digital line systems; videophones; parts there of.	25.4
85251000	Transmission apparatus for radiotelephony, radiotelegraphy, radio broadcasting or television.	7.1
85170000	Electrical apparatus for line telephony or line telegraphy, includes line telephone sets with cordless handsets and telecommunication apparatus	6.7
85280000	Reception apparatus for television, whether or not incorporating radio broadcasting receivers or sound video recording or reproducing.	2.3
85219000	Video recording or reproducing apparatus, whether or not incorporating a video tuner; magnetic, color, cartridge or cassette type; others	2

As of September 2007, 13,539,373 mobile phone lines were in service in Peru, representing a density of approximately 50 lines per each 100 inhabitants. The number of cell phone lines in service grew by 54% between September 2006 and September 2007. Cell phone coverage in Peru is heavily concentrated in the urban areas, with the Lima metropolitan area (Departments of Lima and Callao) alone accounting for 54.6% all of cell phone lines in service nation-wide. As far as the distribution of subscribers of cell phone service according to type of service, 88.5% correspond to the subscribers under pre-payment plans, whereas the remaining 11.5% had post-payment or contract type plans.

Three mobile-phone companies currently operate in Peru; Telefonica Moviles of Spain with 61.3% of the total of mobile-phone lines; América Móvil Perú S.A. (Telmex of Mexico) with 35.6% of the market, operating under the trademark Claro; and NEXTEL of Perú S.A. (U.S.), which holds 3.2% of the market. According to Peru's National Survey of Homes, through June 2007, 40.6% of homes nation-wide had at least one mobile phone. In urban areas this figure was 56.7%, while in rural areas the cell phone penetration rate was much lower, with just 10% of homes having at least one mobile-phone.

The fixed line telecommunications market in Peru is also experiencing strong growth, with density indicators for fixed lines having increased from 8.3 per 100 inhabitants in 2005 to 9.5 lines per every 100 by September 2007. By mid-2007, Peru had 2,632,161 fixed phone lines installed, an increase of 9.6% from a year earlier. Telefonica del Peru S.A.A. holds the majority of Peru's fixed-line market, with 88.6% of the lines. The remained is distributed among 8 operators, including Telefónica Móviles S.A. (previously Bellsouth), with 9.6% of the total lines, operating wireless land lines. Others include Telmex Perú S.A., Americatel Perú S.A., IMPSAT Perú S.A., Infoductos and Telecomunicaciones del Perú S.A., Gilat To Home Perú S.A., Rural Telecom S.A.C and NEXTEL del Perú S.A.

According to the National Survey of Homes (ENAH0) through June 2007, 28.9% of Peru's homes had fixed telephone lines. In the urban areas of the country 43.6% of the homes had fixed lines, whereas the percentage in rural areas was only 1.0%.

In reference to public service telephones, the number of public telephones (coin and/or card operated) was approximately 171,298 by the end of 2007, translating into a density of 6.2 telephones per each thousand inhabitants. As far as the distribution of the number of public telephones installed by company, 90% belong to Telefonica del Peru S.A.A.; Telefonica Moviles owns 3.73%; followed by Gilat to Home Perú S.A. with 3.36% and TELMEX Perú S.A. with 1.3%. Other firms operate less than 1% of the total of the public telephones. The number of public telephones installed as a consequence of FITEL programs and others now serve 6,691 localities or towns in Peru. (FITEL was created to provide the funds to supply telecommunications services to rural areas as well as those considered as preferential social interest).

By the end of 2007, the number of companies working in telecommunications (concessionary) of public services was 385. The majority of concessionaires were engaged in activities related to broadcasting by cable TV, accounting for 256 concessionaires. Another 60 firms provide long distance service with 60. Negotiations between the government authorities and Telefonica del

Peru resulted in the expansion of telecommunications services intended to service the poor, with 660,000 lines to be installed for this purpose over the next 4 years. An additional 25,000 “social lines” (costing S/. 19.00) for some of the poorest regions in Puno, Apurímac, Ayacucho, Huancavelica, Huanuco and Cajamarca) will also be installed.

In November of 2007 the conditions for the implementation of the numerical portability of the public mobile-phone services in the country were approved (DS.No. 040-2007-MTC). The Law of Numerical Portability in the Cell-phone Services establishes that a user has the right to maintain his/her cell-phone number, even though the customer may change their operating company (Law No. 28999). The implementation of the numerical portability would be carried out in three stages. In the first stage the technical solution will be chosen. In the second stage the engineering and operative specifications for the implementation will be determined; and in the final stage testing and implementation would be conducted with a targeted completion date of September 30, 2009.

In January 2008, the Ministry of Transports and Communications awarded to Telefonica Moviles the 450 MHZ band for the installation of wireless technology in Lima and Callao. The authorized frequency band allows the use of mobile-phone services and Internet. With this award, telephone coverage in the capital is expected to be increased by 30%.

Opportunities

With growth in the telecommunications sector expected to continue to be strong, commercial opportunities for suppliers of telecommunications equipment should also remain bright. The major telecom operators are expected to continue with aggressive service expansion programs, with the Telefonica group having an objective of extending its network by 100% and NEXTEL planning a significant expansion of its cell phone coverage. In the course of the 2008, PROINVERSION through public bid; will select the operator to implement the Program “Rural Broadband”. This Program seeks to provide 3,010 localities with fixed phone lines and Internet access of Internet through an approximate investment of 59 million soles. The chosen operator will implement projects in the 450 MHz band, broadband satellite and Wi-max with an approximate investment of \$8, \$45, and \$100 million respectively.

Resources

- Central Reserve Bank of Peru (BCRP): www.bcrp.gob.pe
- Customs: www.aduanet.gob.pe
- Grupo Apoyo: www.apoyo.com
- Ministry of Transport and Telecommunications: www.mtc.gob.pe
- Private Investment Promotion Agency (Proinversión): www.proinversion.gob.pe
- Supervising Agency for Private Investment in Telecommunications (Osiptel): www.osiptel.gob.pe
- Telecommunication Investment Fund (FITEL): www.fitel.gob.pe
- Veritrade: www.veritrade.info

Philippines

Overview

The telecom industry remains one of the most robust sectors in the Philippines. It has come a long way since its deregulation in the 1990s. The industry has posted one of the world's highest mobile penetration rates and is still a world leader in short message service (SMS), or "text messaging," with over 300 million text messages sent daily. The National Telecommunications Commission (NTC) has not released official 2007 figures yet, but based on initial reports from carriers in the third quarter of 2007, mobile subscribers breached the 50 million mark. Fixed landline subscribers are expected to grow by only 2-3% from a 2006 base of 3.6 million.

Until recently, broadband uptake had been slow, but growth rates in 2006-2007 were phenomenal. Industry leaders, Philippine Long Distance Telephone Company (PLDT) and Globe Telecom, both increased revenues for their broadband services. PLDT's broadband subscribers hit the 501,000 mark and total revenue contribution from broadband and internet services surged 43% to Peso5.3 billion (\$130 million, at the current exchange rate of \$1 equals P41) for the first nine months of 2007. Globe Telecom, the second largest mobile carrier, identified broadband as the driving force of their landline business. Their subscriber base as of the third quarter of 2007 doubled compared to 2006 numbers for the same period. They reached 109,000 subscribers contributing P846 million (\$21 million) in revenues. Another pioneer in the wireless landline arena is Bayan Telecommunications, Inc. The company launched their "Bayan Wireless Landline" (BWL) service in 2006 and it has helped improve the declining trend exhibited by the firm's landline business. Bayan expects to close 2007 with 140,000 BWL subscribers, with a projected 10-15% annual growth rate. ADSL (Full Rate asymmetrical DSL) and VDSL (very high bit rate DSL) and Fiber to the Curve (FTTC) are currently deployed in the country. ADSL is dominant because of its affordability compared to VDSL. All carriers have FTTC, which goes only until the distribution point. Fiber to the Home (FTTH) is not available. WiFi & WiMax are likewise available, with WiFi as the preferred technology.

Best Products/Services

- Wireless Communication Equipment
- Broadband Technology
- Innovative Applications
- VoIP Technology

Opportunities

Wireless broadband technology is expected to have high demand in the Philippines, as well as products and services supporting digital multimedia. Opportunities in the industry include value-added services, content, and innovative applications for wireless and broadband. The continued exponential growth of the Business Process Outsourcing (BPO) industry will also have positive effects on the telecom industry. BPO companies use a wide variety of telecom services for redundancy purposes. Stiff competition in the broadcast industry is opening up opportunities for state-of-the-art production and post-production equipment. In addition, the planned migration to Digital Terrestrial Television (DTT) by 2015 will definitely create demand for digital broadcast equipment and digital set-top boxes.

The following are some specific technologies that the local industry is looking at: IPTV, Mobile TV, 3G Long Term Evolution (LTE), WiMax on 802.16e, BPL, Next Generation DSL, FTTH, GPON, BPON, Network Security Systems, 4G, IP Multimedia Systems, SIP Servers, Application Servers, and IPv6.

Another opportunity U.S. companies should be on the look out for is the nationwide Government Broadband Network (GBN) project. It is envisioned to be a “fully integrated single IP-based, nationwide broadband network to allow seamless voice, data and video connectivity within and among national, regional, and local government agencies.” The Department of Transportation and Communication (DOTC) is looking at private carriers to provide this service with the necessary coverage and capacity for expansion. This project has been the source of widespread media scrutiny, after an initial effort to launch the project with Chinese Government funding was tainted by allegations of misconduct.

Resources

National Telecommunications Commission (NTC) www.ntc.gov.ph
Yna V. Capatayan, Commercial Specialist
U.S. Commercial Service Manila
Email: Yna.Capatayan@mail.doc.gov, Manila.Office.Box@mail.doc.gov

Portugal

Overview

Data transmission services are fully liberalized in Portugal. Mobile telephone service was privatized in 2000 as was fixed line telephone service at the beginning of 2001. Portugal Telecom, the former Government telecommunications monopoly and the largest market player, became a private entity. After the full liberalization of the Portuguese telecommunications sector, most of the new fixed operators are now out of business and Portugal Telecom controls 92% of the market.

New private operators blame the failure to privatize the fixed net on GOP mismanagement, especially regarding the lack of access to the local loop, the last link in the fixed telecommunications net that permits access to the final customer. Some of these operators have suggested mergers to create new companies, which could compete with Portugal Telecom in the fixed telecommunications business. Many experts feel that only one strong competitor can exist with Portugal Telecom in this small market of 10.6 million people.

Nevertheless, one of the major Portuguese business groups, SONAE, tried to buy part of the capital of PT having made a public offer for acquisition at the end of 2006. The process, started in the last quarter of 2006, but the national authority for competition did not authorize it. Notwithstanding this struggle over ownership of the fixed operator, the Portuguese mobile telephone market keeps growing. In 2006, revenues generated by the three major Portuguese operators were over four billion dollars. Actual mobile phone market penetration is over 114% of the population (roughly 10.6 million people). In addition, it is forecasted that the launch of Terrestrial Digital Television (TDT) will occur in 2009. The GOP is preparing legislation to regulate this new area of activity and is expected to eventually issue public tenders for operator

licenses. This will create a new dynamic among current and future telecom operators in Portugal as technology integration forces new scales of economy to remain profitable and competitive in this new sub sector of the market.

Best Products/Services

- Automatic answering machines;
- Call blocking devices;
- Paging, call forwarding, messaging, and voice mail;
- Alarm receivers and transmitters;
- Electronic banking networks;
- Broadband ISDN voice data and image transmission;
- Software/hardware to upgrade customer billing and assistance services
- Submarine fiber optic cable
- Cable TV and decoding systems

Opportunities

The telecommunications market in Portugal is expected to continue to grow over the medium term. Imports currently constitute 64% of the total market and the U.S. real share is much higher than the 9.5% reported as most U.S. exports into Portugal often come through other European Union countries. There are many opportunities for American companies to expand their business activities in this area.

Resources

- Instituto Nacional de Estatística: www.ine.pt
- ANACOM – Autoridade Nacional de Comunicações: www.icp.pt/

Qatar

Overview

In the last five years, Qatar's public and private sector have increasingly applied modern technologies in daily activities. The demand for these technologies will continue to grow as the Qatar economy liberalizes and modernizes. The partially privatized Telecommunications monopoly Qatar Telecom (Q-Tel) is constantly striving to upgrade and improve services to international standards. The Supreme Council for Information and Communication Technology (ICTQatar) has ambitious plans to increase IT awareness and use in Qatar as well as play the role of regulator for the IT and Telecom sectors. Qatar has also begun a wide variety of educational reform projects, which will make increased use of modern technologies. The government has embarked upon a program to implement e-government. Given the dominance of U.S. firms in international telecommunications, there is a growing opportunity for U.S. firms to enter the local market. In 2004 Qatar Telecom won a second license for GSM network in Oman. Q-Tel is also looking into expanding to other markets in the Middle East and African region.

Best Products/Services

- GSM network equipment and supplies
- Internet solutions

Opportunities

The population in Qatar is growing and expected to double by 2010. As the needs in telecommunications emanating from the public and private sector are increasing, the growth in this sector is going to be tremendous in the short, medium and long terms.

- Al-Nawras GSM License in Oman
- Expansion of land phone network
- Expansion of the GSM network
- Multiplication of Internet users
- Infrastructure for 3G mobile phones
- Expansion of wireless internet service
- Equipment for 140 public schools with the latest IT and telecommunications equipment

Resources

Qatar Telecom

Qatar E-Government

The Supreme Council for Information & Communication Technology

Contact the Commercial Section of the United States Embassy in Doha through:

www.buyusa.gov/qatar/

Romania

Overview

The telecommunications market is estimated to increase from \$4,053.6 million in 2006 to \$4,945.4 million in 2007 despite declining tariffs for international telephony, mobile services and Internet access, indicating a substantial increase in consumption. The mobile telephony sector accounts for around 62% of the total market in 2007, fixed telephony accounts for about 34%, while Internet and data transmission services have reached 4.8%. The main mobile telephony operators are Orange and Vodafone, and the main fixed telephony operator is Romtelecom. Although faced with strong competition coming mostly from Western European companies, US firms are well represented on the Romanian telecommunications market, especially in wireless, cable, and mobile communications, through UPC. The business telecom market is estimated to rise up to \$6,033.4 million in 2008, a 22% increase over 2007. This will include from classic telephone services to equipment for audio-video conferences.

Best Products/Services

- Wireless communications equipment
- Cable communications equipment and services
- 3G mobile communications equipment and services
- Internet services, VoIP included.

Opportunities

The current situation of the telecommunications market and its main trends indicate that the sector's major procurement efforts during the next years will be related to the projects listed below. State-of-the-art equipment for these projects will be mostly imported.

- Launching of wired-telephony networks following market deregulation;
- Building of four UMTS/3G networks;
- Expansion of the CDMA 450Mhz network;
- Expansion of the SDH network of the National Radio-communications Company (SNR);
- Development of SNR's wireless point-multipoint network in the 26GHz band;
- Modernization of SNR's long, medium, and short-wave transmitters network;
- Upgrading of infrastructure for national TV channels;
- Upgrading cable communication networks to allow the supply of broadband Internet, VoIP, and digital TV;
- Modernization of the infrastructure used by major ISPs;
- Expansion of pilot projects related to the development of e-government (e-procurement, e-tax, e-invoice, e-referendum, e-post, info-kiosk, etc.);
- Implementation of IT&C projects in public administration, education and health sectors.

Resources

- Monica Eremia, US Commercial Service, E-mail: Monica.Eremia@mail.doc.gov
- Ministry of Information Technology and Communications: www.mcti.ro
- National Regulatory Authority for Communications and Information Technology: www.anrc.ro/index.aspx

Russia

Overview

The Russian telecommunications market continues to demonstrate strong growth, in part driven by Russia's steady economic performance, the need to upgrade the telecommunications infrastructure throughout the country, and the continued interest of investors in the telecommunications market. In 2006, the Russian telecommunications market reached \$30.7 billion in sales. In 2007, the market is forecast to grow 17% and total \$36 billion. The sector's average annual growth for 2004-2007 was 25%, but market dynamics are now somewhat influenced by the weak dollar and strong ruble.

The cellular segment accounts for more than 45% of the telecommunications market, and is very concentrated with 90% of total revenue earned by three major national cellular operators: MobileTeleSystems (MTS), VimpelCom and MegaFon. By December 2007, the total number of registered SIM-cards in Russia reached 169 million, a 17% increase over 2006. According to market experts, the number of active mobile subscribers is only half the number of SIM-cards, leaving good potential for cellular market growth. According to J'son & Partners, mobile operators' revenues amounted to \$14.7 billion in the first nine months of 2007 and are expected to reach \$20 billion by the end of that year. The current average revenue per user (ARPU) by the end of 2007 is only \$8, which is motivating mobile operators to look for new technology and/or value added services, as well as expanding into Russia's regions and CIS countries, to increase revenues.

In 2006, sales of telecommunication equipment reached \$4.1 billion. The market for mobile network equipment is one of the largest sub-sectors of the telecommunications equipment market in Russia. Three generations (1st, 2nd and 2.5) of mobile networks are currently represented here. GSM, the standard, covers more than 90% of the cellular market. The Ministry of Information Technologies and Communications reported that the State Radio Frequencies Commission announced on October 23, 2006 its decision to "allocate radio frequency bands 1935-1980MHz, 2010-2025 MHz and 2125-2170MHz for the development of mobile IMT-2000/UMTS standard networks in Russia." Three 3G licenses were allocated through tender offerings in accordance with the Commission's decision. As expected, licenses were awarded to Beeline, MTS and MegaFon. The launch of commercial 3G projects in Russia is planned for 2008. The potential 3G subscribers' pool for the first half of 2007 will likely range from 400,000 to 600,000 and 3G operators expect profits of \$50-70 million by the end of the first year. Further development will depend on the cost of voice services and what consumers are willing to pay.

In 2006, the number of Internet subscribers increased by 18% reaching 22 million, placing Russia in eleventh place among the countries with high Internet penetration. The Internet market was worth \$1.8 billion. In 2008, it is expected to rise 50% to \$2.7 billion, mainly due to the growth of broadband access, which, at 90%, showed the fastest growth in 2006. Though the broadband market size is still not large, the potential is huge; there are currently 2.6 million users, which are expected to increase 130% to six million by 2008.

Total 2006 revenue for fixed-line connection services increased 33% to \$13.6 billion, up from \$10.2 billion in 2005. The process of market liberalization, which was formalized in 2005 and 2006, resulted in 22 long-distance licenses being issued in two-year period. In 2006 most of mergers and acquisitions in telecom occurred in the fixed-line segment witnessing an active privatization of federal operators. This privatization will dramatically change the balance of forces in the market. However, currently only two operators, MTT and Rostelecom, can be considered active market players.

The high growth rate of Russia's telecommunications market has created increased demand for imported products and solutions. Russia currently spends more than \$4 billion annually on telecommunications equipment, most of which is imported. The sector remains one of the most rewarding for foreign investors and manufacturers.

Best Products/Services

The highest market growth is expected in the broadband access sub-sector. Residential broadband (using Ethernet, ADSL, etc.), now booming in Russia, was a \$380 million market in 2006 and was expected to grow to \$500 million in 2007, a 32% increase. Growth in the regions is lagging Moscow, whose market value is \$200 million, but is expected to increase rapidly in the near future. The most promising locations for broadband development are Moscow and the Moscow region, St. Petersburg and other cities in the Northwest Federal District, Yekaterinburg, Novosibirsk, Samara and other cities in the Volga Federal District.

Paid TV is another locomotive of the Russian telecom industry, represented by cable, DHT, and IPTV. This category includes broadband access via DOCSIS and HFC (Hybrid Fiber-Coaxial) technologies. Cable TV networks are being actively developed and are showing steady increases.

Continued growth in the Russian telecommunications services market will yield business opportunities for U.S. telecommunications equipment suppliers. The best sales prospects are high-speed, broadband technologies, multi-service and multimedia solutions and digital equipment. Companies entering the market should be prepared to compete with major European and Asian equipment manufacturers and deal with a complex regulatory environment.

Opportunities

According to the Federal Special Program of the Education Development for 2006-2010, provisions for IT coverage and Internet access in Russian educational institutions, including distance learning, are part of the Federal Program. This initiative may also present opportunities for U.S. companies.

Resources

- 3rd Generation Telecommunication Networks Operators Association www.a3g.ru
- MegaFon: www1.mtsgsm.com/
- VimpelCom (Beeline): www.vimpelcom.ru
- Publications CNews: www.cnews.ru/
- Broadband Conference: www.broadband-conference.com/en
- Commercial Service Contact
Elizaveta Minyaeva, Commercial Specialist
elizaveta.minyaeva@mail.doc.gov
Tel: +7-495-737-5035 (direct); +7-495-737-5030

Saudi Arabia

Overview

The Saudi government foresees the kingdom's telecommunications sector revenues to exceed 55 billion Saudi riyals (\$14.7 billion) by 2010, up from SAR40 billion in 2006, Telecom sector revenues grew from SAR19.8 billion in 2001, to SAR40 billion by the end of 2006, with annual growth of 15%, revenue is expected to exceed SAR55 billion by 2010. STC and Mobily, the current mobile telecom providers in Saudi Arabia have generated combined operational revenue of SAR39.8 billion in 2006, from fixed-line and mobile phone services.

The Saudi Arabian cabinet has recently granted the country's third mobile license to a Kuwaiti MTC-led consortium. It's also expected to grant licenses for three new fixed-line operators. Saudi Arabia had 19.5 million mobile phone lines by the end of 2006, with a penetration rate of 81.7% of the population. Digital subscriber lines reached 300,000 by the end of the first quarter of 2007. Internet users reached 5 million, or 20%, of the population. The Saudi government is mulling investing SAR3 billion to execute its e-government program that will allow 40 state agencies to provide 150 government services through electronic media within five years.

Best Products/Services

The Kingdom of Saudi Arabia is expected to need a significant amount of technology, software and hardware to create the new digital infrastructure that the Saudi government is hoping for.

Best Prospects include:

- DSL access switch, enabling multi-service transmission equipment
- Fiber-optic satellite links
- Wideband transceivers
- Network protocol software and systems
- Broadband wireless access system

Opportunities

The Saudi Council of Ministers has approved a national plan for the development of its telecom and information technology sector with the objective of transforming the Kingdom into a knowledge-based society and a digital economy. The plan calls for the establishment of a powerful telecom and IT industries to make them one of the major sources of income. The national plan for telecom and IT has long-term and short-term objectives. The Kingdom has already begun implementing some plans and programs for the development of the sector. The Kingdom's first Knowledge Economic City (KEC) is coming up in Madinah (*Medina*). It will have a technological and economic information center, a campus for medical research and biosciences and a center for studies in Islamic civilization. The project is expected to attract investments worth more than SR25 billion and create nearly 25,000 new jobs. KEC will have a range of complementary zones – a technology and KBI zone; an advanced IT studies institute; an integrated medical services zone; a retail zone; and a business district.

Resources

- Communications and Information Technology Commission: www.citc.gov.sa
- Ministry of Communications and Information Technology: www.mcit.gov.sa
- Saudi Telecommunications Company: www.stc.com.sa
- Knowledge Economic City: www.sagia.gov.sa/english/index.php?page=knowledge-economic-city-kec

Senegal

Overview

Sonatel, Senegal's telecommunications operator, continues to dominate the market. Sonatel was privatized in 1997 with France Telecom, as the strategic partner. Liberalization of some services accompanied privatization. Two companies now provide cellular telephone services, and there is a competitive Internet services market. As a result, there has been a boom of Internet-related activities and services and in cell phone usage. Cellular service has grown significantly since its introduction in the late 1990s. These last few years have witnessed the spectacular growth of mobile telephony with 3,434,000 subscribers in 2007 and 1,537,000 respectively in 2005.

There are currently two cellular companies: the former "Alizé," now "Orange" owned by Sonatel, and "Tigo/Sentel," 75% owned by Millicom International Cellular. Orange has roughly two thirds of the cellular market, but Tigol is rapidly gaining market share. In November 2007 a third mobile license was awarded to Sudan's Sudatel for \$200 million. The license also permits Sudatel to offer fixed line telephony and internet service (for which Sonatel currently has a monopoly).

An independent regulatory agency for the telecommunications sector – the Agency for Telecommunications and Postal Regulation (ARTP) - was created in early 2002. Besides regulating providers of telecommunications services, the Agency assigns and controls spectrum. The long-awaited telecommunications sector deregulation became effective in July 2004, with the release of a sectoral letter that outlines the IT policy for the coming years. Telecommunications entrepreneurs who had hoped for a sweeping deregulation will be facing a regime of guided deregulation instead. Internet service is widely available in Dakar and other towns either for private subscription or through Senegal’s extensive network of “telecentres” and Internet cafes. The ADSL broadband subscriber base is growing rapidly, though the penetration rate is less than 1%.

Best Products/Services

Best opportunities for U.S. companies remain in providing value-added services such as Voice over Internet Protocol (VOIP) and WIFI technology and call termination for international calls. The regulatory framework governing VOIP remains unclear. ARTP recognizes that VOIP is used on an individual basis but does not permit commercial use of VOIP.

The cellular market in Senegal is growing exponentially. In 2007, the cellular network accommodated 3,434,000 subscribers, doubling the number of subscribers for 2005. Sales prospects remain in the supply of cellular handsets. Other best sales include switching equipment and routers.

Opportunities

The Government wants Senegal to be a haven for teleprocessing services, with its advantageous geographic position, relatively good telecommunications infrastructure and relatively low wages. A number of joint ventures call centers and the telemarketing businesses have sprung up, most of them servicing the French market.

Resources

- Regulations Agency: www.artp-senegal.org/

Serbia and Montenegro

Overview

The telecommunications sector is probably the most dynamic component of Serbia’s economy, and definitely one that is receiving priority attention from the government. The telecom sector already contributes around 2% to Serbian Gross Domestic Product (GDP) and is growing fast. Over the last five years, it has experienced impressive growth, offering Serbia the latest technologies in most branches of telecommunications. Although the telecom sector has a high annual growth rate of 18.3% and projected 5-year compounded annual growth rate of 16.8%, its further development to reach the level of developed economies requires urgent improvement of regulatory environment. Expected changes in the regulatory and business environment in the next two years will bring greater than average value growth.

The dominant telecom company in Serbia is Telekom Serbia. The most current statistics (mid 2007) indicate that Telekom Serbia has 2,700,000 fixed line subscribers. Around 90% of the

fixed line telephone networks have been digitalized. In Serbia, telephone penetration has reached an average 85.0 lines per 100 inhabitants. During the last five years, mobile telephone services have developed rapidly in Serbia. The average annual increase in mobile subscribers is 50%. At the end of 2006, the country's total number of subscribers exceeded 7.5 million subscribers. This figure is expected to reach eight million by mid 2008. Serbia's mobile penetration is estimated at 70%. Telenor (acquired domestic operator Mobtel in 2006), Mobile Telephony of Serbia (MTS), the mobile phone arm of state telecom provider Telekom Srbija, and Mobilkom Austria (recently was awarded third license) share the mobile market in Serbia. They are strongly competing in the introduction of new technology and new high-profit value added services. Significant opportunities for U.S. companies in this sector will be influenced by privatization of the telecom sector and need to modernize existing, and in some areas obsolete, equipment.

State telecom provider Telekom Srbija, which currently has 4.15 million subscribers, plans to increase the figure to over 5 million by 2008. Telekom has more than 600,000 post-paid customers but its goal is to double the number because post-paid users are a more reliable source of revenue. The company launched Serbia's first 3G network and already has 20,000 users, approximately 2,000 video calls are made each day. Telekom Serbia has invested heavily in modern data networks, and its mobile operations unit is gaining market share. The company returned to profitability in 2005 and 2006. Tariff rebalancing will provide a substantive boost, as 80% of traffic is domestic.

Reduction in tariffs on international calls will not negatively impact profitability as most international calls have been switched over to VoIP over the past year. Transmission facilities are comprised of a national and international backbone consisting of about 3,000 km of optical cables for digital transmission systems with 2,5 Gbit/s and 622 Mbit/s capacities. The rapidly growing cable television sector also provides opportunities for investment. There are telecommunications equipment manufacturers with innovative solutions for the particular problems of undeveloped countries: low-cost solution for line doubles (party lines); low cost small scale digital exchanges; home grown ADSL solutions, etc. Mostly European companies are present in this sector (Siemens, Alcatel, Ericson), while there is enough space for U.S. products presence. U.S. telecommunications equipment is very well received in the Serbian market. U.S. telecommunication equipment manufacturers represented in Serbia include Hewlett Packard, Cisco, Juniper, 3Com, and Bay Networks. However, European producers such as Siemens, Ericsson, Nokia and Alcatel heavily dominate the Serbian market.

Best Products/Services

- Routers and switches
- Access servers
- Equipment for mobile telephony
- Cable operators equipment for transmission
- Fixed wireless equipment.

Opportunities

There are lucrative business opportunities for U.S. companies with technical skill and expertise in Internet applications. In particular, as GPRS usage becomes widespread and UMTS cellular telephony is introduced, there will be good prospects for the business-to-consumer market for

publishing via Internet. Other significant opportunities for U.S. companies will come from modernization of equipment, but competition is fierce, mostly from European companies, as stated above. Three other major factors contributing to market growth are the continued increase in Internet users, the substantial increase in mobile phone use, and the increase of services offered by the cable TV operators, private radio stations and TV broadcasting operators. These factors should help create expanded demand for U.S. providers of advanced telephone service solutions, as well as value-added telecommunications services. Other best prospect sub-sectors include Internet services, wireless and broadband Internet access technologies, cable television, and voice-over-Internet.

Resources

- Ministry of Telecommunications and Information Society
Ms. Aleksandra Smiljanic, Minister
Mr. Nebojsa Vasiljevic, Deputy Minister for IT
Address: Nemanjina 22 11000 Belgrade Tel: +381 11 3616 273 Fax: +381 11 3616 273
E-mail: nebojsa@mtid.sr.gov.yu Web site: www.mtid.sr.gov.yu/
- Telecom Serbia Mr. Drasko Petrovic, General Manager
Address: Takovska 2 11000 Belgrade Tel: +381 11 3616 273 Fax: +381 11 3616 273
E-mail: mjojic@ptt.yu Web site: www.ptt.yu
- Serbian Agency for Telecommunications RATEL Mr. Jovan Radunovic, President of Managing Board
Address: Visnjiceva 8 11000 Belgrade Tel: +381 11 241 786 Fax: +381 11 241 805
E-mail: ratel@ratel.org.yu Web site: www.ratel.org.yu

For more information on market entry strategies contact:
E-mail: zorica.mihajlovic@mail.doc.gov

Singapore

Overview

Singapore is one of the most wired countries in the world. In December 2007, mobile phone penetration hit 122.5% and household broadband penetration rate reached 79.2%. There are more than 6,200 public Wi-Fi hotspots island wide, which means there are more than 22 wireless LAN hotspots for every square mile of the country. Singapore has a well developed network of fiber optics cables that span the country. 'Cyber cafes' are popular, and Internet connections are available in most hotels. 3.5G networks based on the High-Speed Downlink Packet Access (HSDPA) standard as well as Worldwide Interoperability for Microwave Access (WiMAX) networks are being progressively deployed in the country. With total submarine cable capacity of 28 Tbps³ and direct international Internet connectivity of 25 Gbps³, Singapore is well positioned as a hub for international capacity as well as a transcable hub where regional submarine cable systems and international cable systems interconnect.

Opportunities

Singapore is a sophisticated market for telecommunications products and services. There are excellent opportunities to sell new applications and solutions to the country and through Singapore as it is a leading adopter in the region and a major entrepot. Best prospects include equipment, content, software and technologies for broadband, wireless broadband, 3G, and Mobile TV.

The Government of Singapore plays an active role in the Information and Communication Technology (ICT) sector through its many initiatives in developing the industry. In early 2005, the Singapore telecom regulator issued six Wireless Broadband Access (WBA) spectrum rights in the 2.3GHz and 2.5 GHz frequency bands. In June 2006, the government announced iN2015 (www.in2015.sg/), a 10-year master plan for infocomm implementation across industries estimated to cost S\$4 billion (\$2.6 billion). Most significant is the Next Generation National Infocomm Infrastructure that includes a Next Generation National Broadband Network (NBN). Following a pre-qualification exercise in which 12 companies and consortia were selected, the Request for Proposal (RFP) was called on December 11, 2007. The RFP is now open to all interested parties to submit their bid to design, build and operate the passive infrastructure layer of the Next Gen NBN by March 25, 2008. The Infocomm Development Authority (IDA) is expected to award the winning bid in the third quarter of 2008. Details can be found at www.ida.gov.sg/News%20and%20Events/20071211184512.aspx?getPagetype=20.

The NBN also called for a wireless broadband network (Wireless@SG), which went online in December 2006. While the tender has already been awarded for this network, see www.ida.gov.sg/Infrastructure/20060816192935.aspx for other wireless technologies the government is also pursuing. There are excellent opportunities for U.S. equipment manufacturers to supply to the telecom service operators in Singapore. Existing service operators not only have recurring expenditure but are also making new investments in order to compete with existing and new market players.

A list of the existing operators can be found at:

- www.ida.gov.sg/Policies%20and%20Regulation/20060424172641.aspx
- www.ida.gov.sg/Policies%20and%20Regulation/20060424160337.aspx.

Resources

- www.ida.gov.sg
- www.sitf.org.sg/marketplace/bizopp.aspx
- www.atissg.org.sg
- www.export.gov/market_research/index.asp
- U.S. Commercial Service, Singapore Contact
Ms. CHIA Swee Hoon, Senior Commercial Specialist
Email: SweeHoon.Chia@mail.doc.gov

South Africa

Overview (Telecommunications Services)

The South African telecommunications services market is estimated to grow at rate of over 40% in preparation for the 2010 Soccer World Cup, declining to about 20% beyond 2010. This market segment presents opportunities for industry players particularly since the South African telecommunications infrastructure is already the most advanced on the African continent.

Telkom SA remains the leading telephone player with just over 4.6 million subscribers, but there has been a gradual decline in the number of fixed line subscribers from 4.7 million in 2006.

Neotel was licensed to operate as the second network operator (SNO), thus introducing for the first time competition to Telkom SA (as the first national infrastructure-based competitor in the fixed line telecoms sector in the country). Rollout has not gone as planned however, due to delays in receiving the necessary spectrum from regulator Icasa. As a consequence, Neotel failed to meet its June 2007 commercial rollout target.

Industry players believe that rollout of wireless broadband services will add a further competitive aspect to the market and will improve coverage in areas that are currently under-served by fixed-line networks. South Africa currently has four WiMAX licensees: Telkom, Neotel, Sentech and iBurst. Neotel has joined the recently launched Seacom project, a U.S. led submarine broadband cable project, which is privately funded, that will link from Mtunzini in South Africa to Mumbai in India and Marseille in France via Mozambique, Madagascar, Kenya and Tanzania. Neotel claims that its participation in the Seacom project will help to 'shake up' the South African telecoms market by breaking incumbent sole operator Telkom's stranglehold on the wholesale international bandwidth market. The new entrant predicts that it will be able to provide bandwidth to other voice and data carriers for up to 80% less than satellite providers once the cable is in place.

The current cellular industry consists of four cellular communications network operators: MTN, Vodacom Cell-C, and Virgin Mobile (a joint-venture between Cell-C and UK-based Virgin Media). The latter operates across the Cell-C network. The South African cellular industry has had a phenomenal growth in the last five years, from almost 14 million subscribers in 2003 to approximately thirty four million in 2006. MTN and Vodacom collectively account for almost 90% of the market. In the face of the eventual slowdown of growth in cellular telephone penetration (where the penetration rate is expected to reach ninety% by 2010) attention will shift towards the advanced services market. Network operators Vodacom and MTN have deployed a further 3G solution to help expand the existing NGN network and roll out HSDPA.

Best Products/Services

- Converged IP Services
- VoIP (Voice over IP)
- PoE (Power over Ethernet)
- MPLS (Multiprotocol Label Switching)
- IPv6 (Version 6 of the IP)
- Broadband Demand Digital Terrestrial Television (DTT)
- Wireless Broadband Services
- Advanced Cellular Services

Opportunities

- Power over the Ethernet (PoE) is a growing requirement for corporate networks.
- Multiprotocol Label Switching (MPLS).
- IPv6 will be considered in every equipment purchase, even though its impact will not be felt in the next couple of years.
- Advanced services marketing in the cellular industry. Network operators have already deployed a further 3G solution to help expand the existing NGN network and roll out HSDPA.
- South Africa is hosting the 2010 Soccer World Cup and industry sources predict a growth rate in telecommunication services of over 40% for this world class event, declining to 20% after 2010. MTN Group will be the exclusive global cellular sponsor of this event.

Overview (Telecommunications Equipment)

The total size for the South African telecommunications equipment market in 2006 was over \$14 billion. This market segment has grown at just under ten% annually, with further predicted growth in 2007. Local production accounts for approximately 50% of total market size, while exports account for less than a third of total market size. In 2006 approximately 50% of all imports were from the United States, with an annual growth rate of approximately 20% from 2006 to 2007.

Most high-tech telecommunications equipment is imported, and the major international manufacturers are well represented, including: Siemens, Alcatel, Nortel, Avaya, and Motorola. The notable exception is Tellumat, a local manufacturer who is a world leader in the development of private branch exchanges (PBX/PABX) and wireless radio equipment. Most players in this industry distribute imported equipment, and many are now re-exporting to the SADC countries (Angola, Botswana, Lesotho, Namibia, Mozambique, Malawi, Mauritius, Democratic Republic of Congo, Tanzania, Swaziland, Seychelles, and Zimbabwe).

Fiber cable and ancillary products are also in demand for the Seacom project. Seacom is a U.S.-led submarine broadband cable project. Seacom is a privately funded project that will link from Mtunzini in South Africa to Mumbai in India and Marseille in France via Mozambique, Madagascar, Kenya and Tanzania. Neotel, the second network operator will own the South African landing station and the local facilities, which will include a link to Johannesburg to ease the country's national bandwidth limitations. This cable will run along the East coast of Africa, providing international bandwidth capacity to a region that has until now been reliant on foreign satellites for the bulk of its international connectivity.

Best Products/Services

- Second Generation Network Solutions
- Digital Broadcasting Infrastructure Equipment
- Billing Systems
- Security and Storage Equipment Systems
- Fiber Cable and components

Opportunities

- The broadcasting industry is planning for the development of digital terrestrial television and digital broadcasting to be covered by digital television by 2010.
- The Seacom project will be a fully integrated multi-technology network, encompassing an undersea fiber optic cable that will link the countries of East Africa to the rest of the world.
- South Africa is hosting the 2010 Soccer World Cup and industry sources predict a growth rate in telecommunication equipment of over 20%, beginning in 2007, particularly in the area of Second Generation Network Solutions products and equipment.

Resources

- Publications
Communication Technologies Handbook
BMI-Technowledge
Contact: Anita Mathews
Tel: +27 (0)11 540 8000; Fax: +27 (0)11 540 8001
Email: ammmm@telkomsa.net www.bmi-t.co.za
- South African Department of Communications (DoC) www.doc.gov.za
- Independent Communications Authority of South Africa (ICASA) www.icasa.org.za
- Telkom South Africa www.telkom.co.za
- Neotel www.neotel.co.za
- Seacom www.seaconint.com
- Sentech www.sentech.co.za
- Transtel (Neotel Partner) www.transtel.co.za
- Eskom Enterprises (Neotel Partner) www.eskom.co.za
- Vodacom (Cellular Operator) www.vodacom.co.za
- MTN Networks (cellular Operator) www.mtn.co.za
- Cell C (Cellular Operator) www.cellc.co.za
- Virgin Mobile www.virginmobile.co.za/
- U.S. Embassy – U.S. Commercial Service
Luisa dos Santos, Commercial Specialist – ICT
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Website: www.ussatrade.co.za/

South Korea

Overview

Korea ranks among the top countries in the world for Internet usage and broadband penetration and has one of the highest numbers of broadband subscribers among all OECD countries. Korea's total number of broadband subscribers is estimated to have reached 98% of the nation's 15 million households as of the end of 2007 and therefore, service providers are planning for

more valued-added services including wireless broadband service and Internet protocol television (IPTV).

Wireless Internet access service in Korea can be categorized into two major services; fixed wireless Internet (WLAN) based on WiFi or Wimax technology, and mobile internet based on code division multiple access (CDMA) technology. Mobile and WLAN services enable users to access all Internet services on handheld devices without cable connections, allowing mobility and convenience. However, in order to satisfy demand for higher bandwidth and mobility over the existing wireless Internet, new “mobile Wimax,” or “Wireless Broadband” (WiBro), service was commercialized in June 2006 by KT and SK Telecom using the 2.3 GHz spectrum with limited coverage in Seoul. WiBro will become the foundation of “Ubiquitous-Korea,” a seamless Internet access/communication environment planned by the Korean government in cooperation with industry. The WiBro service market is expected to attract 600,000 subscribers in 2008, up from 100,000 subscribers in 2007, driving more demand for hardware and applications.

WiBro technology is part of the IEEE802.16 family of wireless Internet specifications, Wimax, and is expected to offer up to 5-15 Mbps bandwidth to mobile devices traveling at over 60 kilometers per hour (about 37 miles per hour). Major local companies, including Samsung, LG, and PosData, as well as the Electronic Technology Research Institute (ETRI), a Ministry of Information and Communication (MIC)-sponsored R&D think tank, are developing a new standard with the help of the Telecom Technology Association (TTA). The development includes the evaluation and adaptation of different types of foreign and local technologies. ETRI will play a major role in developing and localizing WiBro core technology. The institute plans to make at least 20% of the technology homegrown in order to minimize the payment of licensing fees to foreign firms.

This aggressive agenda calls for immediate R&D and infrastructure investment for new WiBro technologies by foreign companies since the Korean government has realized the importance of global standardization in order to export new technologies. Korea’s global leadership in wireless communications and broadband Internet access services has spawned tremendous demand for all types of equipment, contents, and solutions, especially for specialized and innovative technologies, providing opportunities for sales of advanced and highly specialized U.S. telecommunications equipment, solutions, and contents.

Best Products/Services

- WiBro Technologies
- Internet Protocol (IP) TV Technology and Digital Content
- High Speed Data Packet Access (HSDPA) 3.5G Technology

Opportunities

Market demand for WiBro services should drive investment in the telecom sector for the next five years. Nationwide infrastructure installation for WiBro will be deployed in 2008, and more “killer applications” and relevant services including triple play services (TPS), Internet protocol TV, and video on demand (VoD) are expected to be introduced by KT, SK Telecom, Hanaro Telecom, etc. triggering more service and content demand.

According to MIC, the market demand for WiBro service is expected to reach \$1 billion by 2011 with nine million subscribers and will eventually transition to the 4th generation next generation network (NGN) telecom network. The total market demand for mobile WiMax equipment and solutions is expected to reach a total of \$2 billion over the next three years.

Resources

- Ministry of Information and Communication (MIC): www.mic.go.kr/index.jsp
- Radio Research Lab (RRL): www.rrl.go.kr/eng/index.jsp
- Telecommunications Technology Association (TTA):
www.tta.or.kr/English/new/main/index.htm
- Electronics and Telecommunications Research Institute (ETRI)
www.etri.re.kr/www_05/e_etri/
- Local Contact
(Mr.) Chris Ahn, Senior Commercial Specialist, Commercial Service Korea
U.S. Embassy
32 Sejong-ro Jongro-gu, Seoul 110-710 Korea
Tel: 82-2-397-4186, Fax: 82-2-737-5357
Email: chris.ahn@mail.doc.gov, Website: www.buyusa.gov/korea

Spain

Overview (Telecom Services)

Telecommunication services in Spain have undergone a consolidation process in recent years that is expected to continue in the near future. Market growth will be stimulated by factors such as convergence over the VoIP protocol, development of broadband access and actual deployment of Mobile Virtual Network Operators (MVNO's). Telefonica will continue to be the dominant player in most market niches, but there will be increased pressure on the company to provide breathing space to other carriers. An overview of the different sub sectors shows a general trend towards structural changes in the industry.

In fixed networks, Telefonica is the dominant player, but competitors have been able to achieve 29% of market share. Ono, a cable company, and Orange (France Telecom) are the two runner-ups. Investment in fixed networks has finally stabilized after being reduced significantly for some years. Nearly 18 million lines are in service. Local and regional traffic has experienced reduced demand, while international traffic is growing.

Three companies control the Spanish mobile market, encompassing GSM, GPRS and UMTS services. The major cellular operator in Spain is Telefonica Moviles, with more than 46% of the market, followed by Vodafone and Orange. The fourth company, Xfera, revitalized by the entry of Telia Sonera, is offering services under the Yoigo brand. Concerning the introduction of advanced services, the number of clients with UMTS or HSDPA cards is estimated at 600,000. More than 49.5 million mobile lines are in service.

Factors to be considered in exploring the Spanish mobile market are the high number of prepaid clients, the importance of messaging and the actual launch of Mobile Virtual Network Operators, such as Carrefour Movil, Eroski Movil, Pepephone, Lebara Mobile and Happy Movil. The

leading trend in the Spanish broadcasting market has been consolidation of large media groups (a single digital satellite TV operator is left in the market) and preparations for the mandatory switch to terrestrial digital television, which will take place in 2010.

Best Products/Services

- VoIP convergence plus value-added services for mobile telephony and broadband.

Opportunities

- Development of additional mobile virtual network operators.
- Deployment of optic fiber infrastructure.

Overview (Telecom Equipment)

Total investment in telecommunications equipment by Spanish service providers during 2007 is estimated at \$8 billion. The growth rate of investment has been reduced to one digit on 2006-2007, and growth is expected to remain moderate in 2008. Although U.S. products have a strong reputation, there is stiff competition from European and Asian companies, most notably France, Germany, Italy, the UK, Scandinavia, Japan, Korea and China.

An area expected to fuel demand is mobile telephony, where operators continue investments in network infrastructures for UMTS deployment, investing in 2007 an estimated \$2.9 billion. Demand for new terminals or solutions offering mobility to the business environment will also generate growth. Broadband services, mainly focused on XDSL and cable, will continue to demand equipment and solutions as competition heats up between the major players. More than 6 million clients are currently connected to XDSL services in Spain, with an additional 1.6 million connected to the Internet through cable companies. Wi-Fi/WiMax equipment is expected to maintain a robust demand. In the case of broadcast equipment, investment should pick up for the next few years due to the mandatory switch to digital technology.

All equipment must be CE marked and, in some cases, certified in Spain if it is to be connected to the Public Switching Network or if it uses the electromagnetic spectrum for transmission. Teaming with a Spanish counterpart should be considered as one option to develop a better market access strategy and product support.

Best Products/Services

- VoIP Equipment.
- Wi-Fi/Wi-Lan equipment.
- Wireless enabled devices both for businesses and consumers.
- HSDPA-enabled solutions.
- Wireless M2M solutions

Opportunities

The continued launch of Mobile Virtual Network Operators (MVNOs) in the market will provide business opportunities to equipment manufacturers, consultants, and value added service providers. Deployment of new telecom infrastructure in the near future will enable advanced broadband services and related demand.

Resources

- Spanish ICT Association – AETIC: www.aetic.es
- Association telecommunications service providers – ASTEL: www.astel.es
- Secretary of State for Telecommunications and Information Society:
www.mityc.es/telecomunicaciones
- Telecommunications Market Commission: www.cmt.es
- Commercial Service Spain: www.buyusa.gov/spain
- Trade Specialist for Telecommunications: Jesus Garcia: jesus.garcia@mail.doc.gov

Sri Lanka

Overview

The telecommunications sector has undergone major changes during the last decade in terms of subscriber network, private sector participation, modernization, and institutional reforms, making it one of the fastest growing sectors in the country. There has been a steady increase in the number of users of fixed telephony as well as mobile phones. There is significant competition among the existing operators consisting of four fixed line operators, five mobile phone operators, 32 external gateway operators and 20 Internet Service Providers, and several others providing data services, paging, pay phone, trunk radio, and leased circuit telephone facilities. In 2006, the subscriber network expanded by 59% following a 44% growth in 2005. The growth in the mobile telephone services continued with a 61% increase in subscriber network in 2006. The mobile telephone operators dominate the sector although fixed operators have achieved significant growth in the past couple of years.

Several telecommunication development projects were implemented in 2006 to expand facilities in the country. The Bharat-Lanka optical fiber submarine cable was inaugurated in 2006. The Dhiragu-SLT optical fiber submarine cable system between Sri Lanka and Maldives was also inaugurated in 2006. The introduction of Code Division Multiple Access (CDMA) technology in 2005 has resulted in the substantial growth in the fixed access services. Fixed access wire local loop services are expanding rapidly with the introduction of CDMA technology. 3G mobile services have also been launched by some mobile operators. The Telecommunication Regulatory Authority (TRC) also invited applications in 2006 for companies interested in obtaining licenses for non-voice telephony services using cable distribution networks and satellite communication networks. Mobile operators are also expanding their services and investing heavily in infrastructure. There is potential for increased expansion of the telecommunications sector with services such as telemarketing, call centers, data processing and internet based products. This sector stimulated demand for import of modern telecommunication equipment and transmission apparatus.

Resources

- The Telecommunications Regulatory Commission of Sri Lanka: www.trc.gov.lk
- Sri Lanka Telecom: www.slt.lk
- Dialog Telekom: www.dialog.lk
- Celltel: www.celltel.lk
- Suntel: www.suntel.lk
- Lanka Bell: www.lankabell.net

- Mobitel: www.mobitellanka.com
- Eureka: www.eureka.lk
- Lanka Internet: www.lisl.lanka.net
- Central Bank: www.cbsl.lk

Swaziland

Overview

Swaziland's telecommunications network is fully digital. Optical fiber and local loop systems have been installed and link key areas throughout the country. The internet has become an integral part of the communications network in Swaziland. Internet service providers with web hosting services have been established in Manzini and Mbabane. The landline network is a state monopoly. A private company holding a state sanctioned monopoly provides cellular phone services. The Swaziland Telecommunications company is looking in ways to develop their Information and Communications Technology (ICT) capability. SPTC has established a relationship with Microsoft South Africa and there is a possibility of SPTC sourcing communications' software from them.

Best Products/Services

U.S. suppliers/manufactures will find a market for cellular phone products.

Opportunities

By state sanctioned monopoly, only MTN Swaziland Ltd offers cellular service. The industry is scheduled to open to competition in 2008; however, the final status of the industry is yet to be determined.

Resources

- Swaziland Posts and Telecommunications Corporation: www.sptc.co.sz

Sweden

Overview

Imports from the U.S. are in reality higher as Swedish Customs statistics do not show U.S. goods imported via other EU countries and U.S. production plants within the EU. Sweden is in the forefront in terms of communications in general and wireless communications in particular. TeliaSonera is the largest provider of fixed telephony followed by Tele2, and Telenor. Mobile phone penetration is extremely high in Sweden, over 100%. There are three GSM carriers that have their own infrastructure; TeliaSonera, Tele2, and Telenor. Third generation (3G) services are provided by four operators; 3 (Three), TeliaSonera, Tele2, and Telenor and reach 90% of the Swedish population. All told, there are over 20 service providers in the mobile telephony market. IP telephony is gaining ground in the Swedish market, both in the corporate and consumers markets.

It is estimated that around 3.4 million mobile phones were sold in Sweden during 2007. The share of 3G phones is increasing steadily. The market for mobile broadband is booming. Operators are offering mobile broadband with increasingly higher speed, which will boost the

market for PC cards, USB modems and high capacity mobile phones Internet penetration in Sweden is very high. In the age group 15 to 75, around 85% have access to the Internet at home and 47% have access to broadband. ADSL is the dominating form of broadband access, followed by CaTV and LAN. Use of W-LAN is expanding in Sweden. The largest operator, Telia Homerun, has more than 15,000 hotspots throughout the country. Other service providers are Defaultcity, Powernet, Glocalnet, and The Cloud Nordic. Fiber optic infrastructure covers some 200 metro networks in more than 100 towns. These networks are open and neutral, i.e. they offer capacity to any service provider under equal terms, which benefits consumers as they can pick any service provider they wish instead of being locked in with one provider.

Around four million households in Sweden have access to at least one television set. Broadcasts are provided via terrestrial, cable or satellite means. The Swedish Parliament decided in 2003 that Sweden would discontinue analog TV broadcasting and shift to digital. The process started in 2005 and was completed during the fall of 2007. Consequently, all terrestrial TV broadcasting in Sweden is now digital.

Best Products/Services

- Wireless Broadband
- VoIP Telephony
- Triple Play
- Wireless communications hardware and software

Resources

- Ministry of Industry, Employment and Communication: www.industry.ministry.se
- Invest in Sweden Agency (ISA): www.isa.se
- ITSweden Information site on the Swedish ICT sector: www.itsweden.se
- U.S. Mission to the European Union, Foreign Commercial Service: www.buyusa.gov/europeanunion/
- Local Commercial Specialist: gunilla.laroche@mail.doc.gov

Switzerland

Overview

In 2006, the Swiss telecommunications equipment and services market grew by 2.5% and was valued at \$9.1 billion. The same percentage growth is forecasted for 2007, the exchange-rate-adjusted equivalent of \$229 million. No other country invests as much per capita in telecommunications as Switzerland. Private Internet use is the second highest in Europe, and Switzerland ranks third in terms of E-commerce. Switzerland is an international leader in the rollout of broadband services. ADSL is available for more than 98% of telephone connections and is offered by 30 different suppliers. Mobile network coverage is high in all regions, despite the country's mountainous topography. The networks of the three largest providers cover 99% of the Swiss population. Swisscom (62%), Sunrise (19%) and Orange (18%) are the suppliers with the biggest market shares. Swisscom is no longer the sole provider of telecommunication services, which has resulted in healthy price competition. These providers operate their own GSM (Global Standard in Mobile Telecommunications, 2nd Generation, 900 and 1800 MHz)

networks, while a fourth player, Tele2, obtained a license to offer services via third-party networks only.

Mobile services, including mobile Internet, and broadband Internet continue to drive the market. Demand for ADSL was strong in 2006; the Swiss market reached more than 2 million ADSL subscribers (19% growth rate) and 660,000 cable connections (10% growth rate). However, the Swiss ADSL market demand demonstrates the disadvantage of being completely controlled by an ex-monopolist telecom provider. With Swisscom dictating both the pricing and the speed, Switzerland has started to lag behind in both aspects. Surrounding countries like Germany, France and Italy offer ADSL connections at a fraction of the price. The Swiss Competition Commission has been investigating the high prices Swisscom charges to its competitors for the ADSL service, but no immediate result can be expected.

One of the strongest competitors to Swisscom is Cablecom. With over two million cable TV connections in Swiss households Cablecom controls the second largest network and is currently the only other company besides Swisscom that offers true triple play service (data, voice and television/radio) to its customers in Switzerland. Cablecom was acquired by Liberty Global, Inc., for an estimated \$2 billion. On December 16, 2005, Sunrise and Cablecom entered into a strategic partnership on mobile telephony. Swisscom started its IPTV network in late 2006 and has already received over 20,000 orders for the service, resulting in a six-week installation delay for new customers. In the mobile telecommunications market, there were 7.4 million users in 2006, representing a 9% increase over the previous year. Forecasts include continued growth in information technology spending in Switzerland, a further decrease in mobile communication costs, and expanded services for third-generation mobile devices, such as IPTV. Continued strong growth is expected for VOIP solutions.

Best Products/Services

- Telecommunication hardware and software
- Wireless communications hardware and software
- IT Security (software, hardware and consulting)
- Voice over IP solutions
- Virtual Private Networks
- Outsourcing
- Consulting
- Mobile and radio services
- Internet/Web services
- Data transmission
- Leased line business

Resources

- Federal Office of Communications: www.bakom.ch
- Federal Communications Commission: www.fedcomcom.ch
- Federal Office of Information Technology: www.bit.admin.ch
- ICT Switzerland: www.ictswitzerland.ch
- Swiss Association of Telecommunications Users: www.asut.ch
- Maria Pamich, U.S. Commercial Service, Bern, Switzerland: maria.pamich@mail.doc.gov

Taiwan

Overview

In order to increase market competitiveness, local fixed-network carriers, mobile operators (2G/3G), and broadcasters (terrestrial TV, radio, and CATV networks) are making efforts to upgrade their network infrastructure. Taiwan's demand for telecom equipment is expected to remain constant through 2008. The majority of Taiwan produced telecom equipment is for export, mainly cellular handsets, WLAN, GPS, xDSL CPE, SOHO routers, Ethernet LAN switches, cable CPE, and Bluetooth devices. However, many advanced products must be imported. European firms have led the market for mobile network infrastructure equipment and handsets and Korean firms are very aggressive in the handset market.

Best Products/Services

- Next generation network related technologies
- Fixed mobile convergence
- VoIP
- WiMax
- Mobile TV
- Wireless sensor networks
- Low-end handsets with a color display and built-in digital camera
- Audio production equipment
- Digital editing systems
- Broadcasting transmission equipment
- Test equipment

Opportunities

The Mobile Taiwan Project (part of the E-Taiwan Project) has a budget of \$120 million and will be undertaken from 2006 to 2008. The project aims to enhance the island's wireline and wireless broadband infrastructure by resolving the last mile problem, implementing fiber to the home in both fixed-line and cable television networks, as well as enhancing wireless infrastructure and applications. In mid-2007, the Taiwan telecom regulatory body awarded six licenses to provide WiMAX services which are expected to result in investments of \$148 million in network construction. In addition, Taiwan authorities have allocated \$29 million to integrate related resources and help the private sector develop the WiMAX industry, which will stimulate another injection of private investment projected at \$9.3 million. These projects are expected to boost the demand for broadband wireless solutions and equipment.

Resources

- Industry Technology Research Institute (ITRI): www.itri.org.tw
- E-Taiwan Project Office: www.etaiwan.nat.gov.tw
- National Communications Commission: www.ncc.tw
- CS Taiwan Commercial Specialist: Frances.Li@mail.doc.gov

Tanzania

Overview

In February 2005, Tanzania initiated liberalization of its telecommunications sector, ending the exclusivity of a government-owned telecommunications monopoly, TTCL. Licenses to operate various telecommunications services are made available to any investor. The state now only possesses 36% of the company, while the German-Dutch telecom Group MSIDetecon has purchased 35%. 14% is owned by national financial institutions, 10% by international banks and the remaining 5% by TTCL employees.

The TTCL has a unique license, allowing the company to offer services of fixed and mobile telephony, VSAT as well as internet services. The company intends to install a WCDMA network (Wide Code Division Multiple Access) in order to improve the standard of the fixed lines. TTCL also introduced a mobile service from the end of 2006 and so far it has attained 41,148 subscribers. The market share of TTCL is estimated at 3%. The demand for mobile telephony and internet has been constantly increasing, the teledensity has increased from 5% in 2004 to 10.5% in 2006. By September 30, 2007, about 7.7 millions Tanzanians owned telephone lines. This is an increase of about 12% from June 2007. The mobile telecommunication leads the market by having more subscriptions (98%) as compared to fixed line services (2%).

There are four major mobile-phone operators - Zantel, Celtel, Mobitel, Vodacom – with coverage in almost every part of Tanzania, including rural areas. Tanzania Communication Regulatory Authority (TCRA), has issued licenses to five new operators and ten existing operators migrating to the new converged licensing framework,. Four firms – Datacom Africa Tanzania Limited, Cel Solutions Limited, Impaktel Limited and Benson Informatics – have been given concessions for national applications services, allowing them to offer facilities like earth stations, fixed links and cables payphone services. The license categories in the converged licensing framework include: network facility, network service and content service. The other licensed firms are Afsat Communications Tanzania Limited, Stacom Network Africa Limited, Allden Satellite Networks, Africa Online Tanzania Limited, Atma Electronics and Software Limited, CATS Net Limited, Jua Limited, Kicheko Limited and University Computing Centre. The Tanzania Communication Regulatory Authority (TCRA) regulates Tanzania's telecommunications industry.

Best Products/Services

Tanzania's telecommunication sector depends on imported equipment, largely from Germany, U.K., Malaysia, India, and the U.S. Potential for U.S. exports exist in the following areas:

- Landline services for both urban and rural areas
- Wireless services and equipment
- Mobile cellular operators
- Internet service and equipment
- Voice over Internet services
- Broadcasting stations
- Postal and courier services

Opportunities

Liberalization has opened up opportunities to establish new telecommunication operations, particularly for mobile cellular operators, public data communication operators, closed user group data communication providers, radio paging service providers and Internet service businesses. Opportunities also exist to provide modern technology and support services to the current industry players. E-Commerce A few local websites recently began offering limited e-business services. However these services are constrained by the lack of a national payment system, local credit cards, and a legislative framework appropriate for e-business. These constraints need to be addressed urgently. Most significantly, Tanzania's legal framework does not provide adequate safeguards to create an environment of trust for e-business transactions. Consequently, financial institutions are not able to set up provisions for supporting e-transactions neither for their own nor for other clients.

Resources

- Tanzania Investment Center: www.tic.co.tz
- Presidential Parastatal Sector Reform Commission (PSRC): www.psretz.com
- Tanzanian Communications Regulatory Authority: www.tcra.go.tz
- Ministry of Communications and Transport: www.moct.go.tz
- Commercial Section, U.S. Embassy Dar es Salaam
drscommercial@state.gov

Tunisia

Overview

Tunisia fulfilled a major commitment under the WTO basic telecommunications agreement (which required market access and same national treatment for foreign telephone service providers by January 2003) when the sector was opened up to foreign competition for a private cellular network license. No US companies bid for the license, which was awarded to Orascom of Egypt and Kuwait's Wataniyya (whose share was since sold to Qatar Telecom) and marketed as Tunisiana. A Tunisian/Monegasque consortium (Planet Tunisie and Monaco Telecom), Divona, has been awarded the contract for operation of a Very Small Aperture Terminal (VSAT) license. Partial privatization of Tunisie Telecom, the state telecommunications agency, took place in early 2006 when 35% of its capital was sold to a Dubai-based consortium.

Best Products/Services

All sectors of the telecommunication industry are expanding rapidly, and there are excellent opportunities for US companies. In recent years, US firms have been successful in fields such as fiber optics and local loop systems.

Opportunities

Overall penetration rates for fixed and mobile phones have increased rapidly since 2001 reaching 95.32% in September 2007. The number of fixed lines is 1.2 million and total mobile lines reached 8.5 million (source: Tunisia's Ministry of Communication Technologies). Tunisia now has one of the highest mobile phone subscriber rates in

Africa. Now that Tunisia's rapid expansion, which covers 3.6 million subscribers, has reduced pressure on the GSM network operated by the national telecommunications agency, Tunisie Telecom, which has over 4.3 million subscribers, is turning its attention to promoting expansion of its land line telephone network. In August 2007, there were around 1.7 million Internet users in Tunisia, but only about 235,000 subscribers (source: Tunisia's Ministry of Communication Technologies).

The operation of call centers represents a new and rapidly expanding service industry in Tunisia. The country's infrastructure, coupled with excellent human capacity, supports this industry well. There are over 130 call centers in operation employing 11,000 persons. They serve primarily French-speaking clients, although some serve the Italian market and at least one, specialized in the health sector, operates in English serving the UK market. Tunisia has been cautious on third generation (3-G) mobile phone technology, but Chinese telecommunications operator Huawei provided UMTS equipment for a trial of 3G services during the last UN World Summit on the Information Society. Huawei bids aggressively on current telecommunications tenders and has been able to offer exceptional financing terms that US and European competitors are not able to match. Siemens, Alcatel and Ericsson are the major European competitors in the sector. A second Chinese company, ZTE, is also active in the market.

Resources

- Ministry of Communications Technology: www.infocom.tn
- ATI (Agence Tunisienne d'Internet - National Internet Agency): www.ati.tn
- Tunisian Postal Service: www.poste.tn
- FIPA (Foreign Investment Promotion Agency): www.investintunisia.com
- Tunisian Industry (government site): www.tunisieindustrie.nat.tn

Turkey

Overview

In 2007, the total number of GSM cellular service subscribers approached approximately 60 million with an approximate penetration rate of 85%. The total telecom equipment and service market grew to \$18 billion and is expected to expand by 17% in 2008. Fixed line subscribers are approximately 19 million, reaching almost 100% penetration per house basis. The three GSM cellular operator, Turkcell, Vodafone and AVEA and the fixed line operator Turk Telekom will invest in equipment and services at a total value of \$3-4 billion in 2008. GSM operators will be deploying new IP type of switches to increase number of subscribers. Turkcell has approximately 64% of the GSM market, Vodafone approximately 21% and AVEA 15%.

In 2008, Telecommunications Authority (www.tk.gov.tr) (TA) will announce tenders for number portability, 3.5G third generation GSM cellular systems, and WiMax services. The 3.5G licenses will be given for 1900 MHz. When 3.5G is launched in Turkey, GSM operators estimate that 48% of the subscribers will use the handsets as video telephone, 47% as mobile Internet, and 38% as mobile TV. Program and software developers, service companies with special TV and video broadcasting over the 3.5G cell phones will

be able to obtain great business in Turkey during the next 5 years. For commerce, with the introduction of the mobile signature, customs formalities will be completed much quickly. Ojer Telecom (a JV between Saudi Oger and Telecom Italia) owns 55% shares of Turk Telekom. In 2008, Turkish Government will additionally privatize 15% shares of Turk Telekom through public offering. Turk Telekom's business development continued and will continue in 2008 spreading the usage of high speed internet throughout the country.

Turk Telekom will continue to be the major buyer of fixed-line telecommunications equipment. Turk Telekom with approximately 20 million subscribers may invest in new technologies in 2007. Turk Telekom plans to expand its ADSL backbone, therefore, will continue to purchase new ADSL equipment. Turk Telekom will invest \$3.42 billion thru 2010 for its Next Generation Network (NGN) project and will also replace its rural area switches with small telephone switches over 10,200 switch centers. Turk Telekom is also planning to establish IP TV and number portability. Over 40 private long distance telephony companies have been also operating over the last 3-4 years, mostly using VoIP via an interconnection agreement with Turk Telekom.

These companies continue establishing their own networks. If the Telecommunications Authority (TA) improves the interconnection agreements with Turk Telekom for these companies, their investment and competitiveness will continue. Vodafone and AVEA are expected to make significant new investments in 2008 and also increase promotions to expand their subscribers. If the TA proceeds with the number portability license tender this year, the competition between the GSM operators will greatly increase and shares of Vodafone and AVEA in the market would considerably raise.

Turkcell is the largest GSM cellular operator in Turkey. It has over 35 million subscribers. Their founding shareholders are Sonera Holding, formerly known as Telecom Finland Ltd. and is currently owned by TeliaSonera, Çukurova Group and MV Holding. 23.4% of Turkcell shares are publicly traded in Istanbul and New York Stock Exchanges.

AVEA is the third largest cellular phone operator, having approximately 8 million subscribers. Turk Telekom owns 81% of the shares of AVEA and the Türkiye İş Bank owns the remaining 19%. AVEA operates at 1800 MHz GSM frequency, and Turkcell and Vodafone operate at 900 MHz GSM systems.

The above mentioned investments are inevitable as the number of subscribers in mobile telephony increased three times while the fixed line subscribers remained constant during the last five-year. TA has registered 59 million GSM cellular phone handsets and Turkey imports approximately 10 million mobile handsets every year. Many subscribers continuously change their cell phones with new models sustaining consistent growth in the handset market. Turkish GSM companies will widely implement new services such as Multimedia Messaging Service (MMS), Mobile Video Streaming (MVS) and other new features by moving forward to the 3G technologies. These services, new GSM and fixed telephony players multiplied by the competition introduced through the new long

distance telecom companies will boost the telecommunications services market in Turkey.

GSM cell phone sets suitable for video downloading and TV broadcasting equipped with wide band Internet access will be the driving force for growth in this sector. These new technologies will be the basis for the 3G and 4G operations.

The private sector may make major investments on the establishment of new fiber-optic networks, VoIP Equipment and Wireless Local Loop networks. Due to its strategic location in Eurasia, between Europe and Central Asia and Middle East, Turkey has the potential to become a major hub for the distribution of telecommunications equipment in the region.

In Turkey, Northern Telecom, Alcatel, Siemens, Ericsson and NEC supply majority of the fixed lines switches, trans-multiplexers, and other telephony equipment. U.S. companies can be competitive in software programs required for customer databases, emergency call services, corporate management and intelligent network operation centers. Motorola, Nokia, Ericsson and Siemens are the main GSM switch and base station suppliers. U.S. companies can be competitive in new software products required by GSM cellular operators to provide new services to their clients and better corporate and client management.

Best Products/Services

- Number portability
- New model GSM handsets with new features (3G)
- Multimedia Messaging Service (MMS)
- Mobile Video Streaming (MVS)
- WiMax technologies and services would be in great demand. Turkish companies are seeking partners to participate in such tenders.
- VoIP equipment
- TV Broadcasting over 3G phones, video and other data transfer over the cell phones will be in high demand once 3G licenses are deployed.
- ADSL equipment, switches and networks for long distance operators
- SCADA systems for main natural gas transmission lines and electricity distribution networks
- Third generation GSM networks, depending on the timing of the 3G license tenders

Opportunities

U.S. companies should not miss the opportunity of supplying of number portability software. GSM companies will be procuring new network equipment and software to expand their services and provide better quality service to their clients. Turk Telekom's potential investment of \$3.42 billion until 2010 for its Next Generation Network (NGN) project will be a major opportunity. TT's plans to change its rural area switches with small telephone switches in 10,200 switch centers, to establish IP TV and number portability are other opportunities. The TA will conduct 3G, WiMax and high frequency

band license tenders in 2008. Once the new telecom law passes, there will be more liberalization in providing telecom services. U.S. companies should consider this large telecom market as a hub for the region and consider establishing joint venture companies to supply to the EU markets as Turkey is already in the European Customs Union and a candidate to join the EU. (CE certification is required by the import laws of Turkey to be able to export to the Turkish market.) Additional opportunities exist for the Turkish market in international traffic either originating or terminating in the country. Due to the widely dispersed Turkish population there are considerable international calls being placed, primarily from Western Europe and the United States to Turkey.

Resources

- Telecommunications Authority's: www.tk.gov.tr
- Turk Telekom:
www.turktelekom.com.tr
- Turkcell: www.turkcell.com.tr
- Vodafone: www.vodafone.com.tr
- Avea: 's web site: www.avea.com.tr
- Turkish Competitive Telco Operators Association (TELKODER)
www.telkoder.org.tr
- Turkish Electronics and IT Industries Association (TESID)
www.tesid.org.tr

Ukraine

Overview

The revival of the Ukrainian economy after 2000, as well as foreign and domestic investments in telecommunications made over the last 15 years, has brought marked changes to the Ukrainian telecom industry, particularly in mobile wireless and data transfer. However, the lack of transparency and slow decision making in licensing and frequency allocation, corrupted procurement practices and continuing delays with the privatization of Ukrtelecom (the national telecom carrier), as well as ongoing disputes between Ukrtelecom and private telecom operators seriously hurt the development of the entire telecom industry. Telecom industry revenues grew over 23% in 2007. Sales in mobile telephony, TV& radio broadcasting, fixed local loop grew 28-29%. Mobile telephony leads among other sectors with 62% market share. It is followed by long-distance and international communications (15%), fixed local loop (10%), and data transfer (4%). In January 2008 Ukrainian Government decided to sell over 60% of Ukrtelecom through open tender by mid-year.

- **Mobile Telecommunications:** Five Ukrainian GSM operators – MTS Ukraine, Kyivstar GSM (majority shareholder: Telenor), Astelit (majority shareholder: Turkcell, trade mark: Life), Golden Telecom GSM, and Ukrainian Radio Systems (majority shareholder: Vypelcom, trade mark: Beeline) service over 51 million customers. Reportedly, the two leading mobile operators, MTS and Kyivstar have over 20 million customers each, while other operators lag far behind. With this level of market penetration, growing competition and the overwhelming

dominance of the voice component in the mobile traffic, the numeric growth of the GSM customer base is no longer a priority, and mobile operators are actively pursuing new strategies to increase their revenues. In November 2007, Ukrtelecom launched a 3G (UMTS) mobile network using Nokia Flexi WCDMA technology and a comparable technology solution supplied by Huawei.

Thus far, Ukrtelecom's 3G network covers only seven major Ukrainian cities. An alternative private 3G operator PEOPLEnet launched CDMA EV-DO technology based services in early 2007. Although other major mobile carriers sought 3G licenses and spectrum, their requests have been denied so far. In November 2006, the Ukrainian government issued 30 regional WiMAX licenses. In October 2007, Ukrainian-British JV Pan-Wireless bought a nationwide WiMAX license for the spectrum band of 5,730-5,760 GHz.

- **Internet & Data Transfer:** As of May 2007 there were close to 5 million Internet users in Ukraine. Unfortunately, the geographic distribution of Internet users is very uneven. Kyiv, the capital accounts for over 61%, the share of six other big cities (Dnypropetrovsk, Odessa, Kharkyv, Lvyy, Donetsk, Zhaporyzhzha) is over 27%, while the rest of the country accounts for only 11% of the total number of Internet users. Google (with 65% market share) and Yandex (with 18%) lead among search engines. DSL and Ethernet connectivity turn into a choice of favor for a growing number of Internet customers. In 2007 the number of broadband customers grew 64% and reached 378,000.

Best Products/Services

- 3G
- WiMAX
- Internet connectivity through digital TV cable networks.

Opportunities

- Privatization of Ukrtelecom
- WiMAX and 3G licenses
- Government procurement
tenders:www.zakupivli.com/control/en/publish/article?showHidden=1&art_id=575386

Resources

- National Commission for Communications Regulation of Ukraine:
www.nkrz.gov.ua
- State Department for Communications and Information of the Ministry of Transport of Ukraine: www.stc.gov.ua/
- Telecom Club (regular convention of telecom executives and equipment suppliers):
www.telecom-club.org.ua/
- PC Week /UE: www.pcweek.com.ua/

United Kingdom

Overview

Since opening up to competition, the UK telecoms market has become one of the most dynamic in the world, with new technologies such as wireless and broadband internet continuing to drive market growth. The UK Government has encouraged the use of Wi-Fi and deregulation has allowed public network operators to use certain parts of the spectrum that are exempt from licensing for Wireless LAN (Wi-Fi) type systems.

The last 18 months have seen steady growth in telecoms sector revenues driven by growth in broadband Internet and mobile sectors. The level of broadband penetration in the UK, measured by subscribers per 100 population, is now comparable to most European countries although is still behind the USA, Japan and most notably Korea. The UK telecoms sector is set to evolve rapidly over the next few years. While British Telecom's (BT) digital subscriber line (xDSL) products have consolidated its position as the main broadband wholesale delivery mechanism, BT is being forced by regulators to progress its local loop unbundling (LLU). There are currently over 1 million unbundled local loops in the UK.

The first elements of BT's new next generation network (21CN or 21st Century Network) are now being rolled out in the UK. The first next generation broadband products have been launched and these should be available to about 50% of UK end-users by 2009. The eight strategic partners chosen to work with BT are: Alcatel (now merged with Lucent), Ciena, Cisco, Ericsson, Fujitsu, Huawei, Lucent (now merged with Alcatel), and Siemens. Those companies interested in subcontracting opportunities should now contact these prime contractors rather than BT. As a result of a slowing economy, we expect both businesses and consumers to tighten their belts resulting in little or no growth in this sector in 2008.

Best Products/Services

- **Broadband Technologies** – Broadband is very widely used by the UK consumer. Companies providing devices or software that can leverage the capabilities of this technology are likely to find a market.
- **Video and Voice over IP Technologies and Services**, the nascent triple play market, is likely to grow rapidly as the bandwidth on broadband increases.
- **3G/UMTS Technologies and Services** – The five cellular networks are rapidly upgrading the coverage of their UMTS service. Companies that can provide products and solutions into this market are likely to find partners.

Opportunities

- The market is developing a triple play sector and quad-play offering once Virgin Mobile (wireless MVNO) and NTL (a current triple play leader) finalize their merger and re-brand in 2007. Traditionally, it is only the cable telco's who have had a true triple play offering, but LLU has allowed pioneers to enter the market. Manufacturers of innovative convergence technologies should look at the UK market.

- The mobile telephony sector is being driven by 3G services, although uptake has been relatively slow due to the high cost of using options such as music downloads. There is scope for the introduction of new 3G products in the market. VoIP has joined the mainstream following product announcements from the leading UK telecoms providers.

Resources

Trade Associations

- Intellect: www.intellectuk.org
- Mobile Operators Association: www.mobilemastinfo.com
- The Internet Service Providers' Association: www.ispa.org.uk

Government Departments

- Department for Business, Enterprise and Regulatory Reform (BERR)
www.berr.gov.uk/sectors/telecoms/index.html
- Ofcom: www.ofcom.org.uk
- Mr. Richard Stanbridge, Senior Commercial Specialist, U.S. Commercial Service,
U.S. Embassy Tel. 011 44 20 7894 0419 richard.stanbridge@mail.doc.gov

Uruguay

Overview

Overall, the U.S. maintains an approximately 13% market share in telecommunications related products. The growth of mobile communications in Uruguay greatly surpasses the growth of fixed communications (which has become almost stagnant.) In 1997 there were 761,000 landline connections and 100,000 cellular subscribers. By late 2007, there were 998,747 landline connections and almost three million cellular subscribers (85% prepaid.) In 2007, telecommunications represented 3.81% of GDP. The Uruguayan market is shared by three carriers: the dominant state-owned ANCEL (42% market share – down from 60% two years ago), Spain's Telefónica / Movistar (formerly BellSouth - 40% market share), and Mexico's América Móvil / CTI (18% market share.) BellSouth began service in 1991, ANCEL in 1994, and CTI in 2005. Stiff competition from the three cellular carriers forced the state-owned telecommunications company ANTEL to discontinue national long distance landline service. All calls within Uruguay are now charged as local calls.

Fueled by aggressive commercial promotions, between October 2006 and October 2007 the number of subscribers almost doubled. 2007 closed with almost 3 million subscribers representing a 70.6% mobile teledensity. It is expected that the cellular penetration will surpass 100% by 2011. In December 2005 the three carriers interconnected their systems to allow for the exchange of short message services (SMS – a possibility not yet available for multimedia message MMS.) The subsequent explosion in SMS messages resulted in network saturation and as of November 2007 the problem had not been completely resolved, especially at peak holidays. An average of 115 million SMSs are sent per month among the three carriers at a cost of \$0.05 per message. ANCEL recently reported that

message sending has become one of the principal uses of cell phones among teenagers -- more time is spent on sending SMSs than in making actual calls.

Total invoicing in 2007 reached \$723 million and is expected to increase to \$1.1 billion by 2012 at an annual growth of over 4%. The two private carriers reported investments of \$42 million during 2007. ANCEL and Movistar operate on 1800MHz and CTI on 1900MHz frequencies. GSM leads the market with 58% participation; CDMA follows with 24%, TDMA with 16%, and AMPS with a 2% share. In a recent press conference, CTI reported an average return per user (ARPU) of \$12 per month (against a U.S. industry average of \$43,) but consistent with an \$11.00 average in the rest of Latin America. According to CTI, this low ARPU could be increased by offering more value-added services (SMS, MMS, mobile TV, etc.) especially to regional tourists during the summer vacation months.

3.5G services were introduced in mid 2007 yet high costs have kept development slow. The vast majority (85%) of subscribers are pre-paid. Depending on the carrier and time of day, costs per minute in U.S. Dollars range from \$0.16 to \$0.60. Plans as those offered in the U.S. which include 2,000 anytime free minutes, etc., are unheard of in Uruguay even for subscribers with monthly contracts. An average 70 minute contract fractioned every ten seconds costs approximately \$11. Except for landline calls that remain a state monopoly, Uruguay liberalized the telecommunications market in 2001. The liberalization also created a new regulatory entity (URSEC -- the Unidad Reguladora de Servicios de Comunicaciones) to regulate and oversee the Uruguayan telecommunications market. However, largely because of its significant political influence, the state-owned telephone company ANTEL continues to have a strong grip on the sector. ANTEL also dominates other aspects of the country's telecommunications market through its ISP and cellular subsidiaries ADINET and ANCEL respectively. ANTEL commands a 77% market share in international long distance calls; the rest is divided among three major and five very minor competitors that cater principally to businesses. ANTEL's ISP subsidiary ADINET commands a similar market share in ISP services. Fixed line teledensity is 80%, one of the highest in Latin America. Due to its 100% digitalization, advanced telecommunications infrastructure, highly trained population, and relatively low salaries, Uruguay is quickly positioning itself as a preferred location for regional call centers. HTSUS 8517 (telephone sets) represent 72% of total telecommunications imports.

Opportunities

Given the strong entry of CTI in late 2004, combining beefy promotion and low prices, the market for cellular phones and transmission antennas and equipment has risen considerably. Both Telefónica and CTI are increasing their network to provide national coverage. The carriers have not yet announced their investment plans for 2008.

Opportunities may also exist for new cable TV operators in Montevideo (population 1.5 million.) URSEC has announced it will make a call for interested cable operators in early 2008. Foreign ownership of cable TV is allowed by law. In August 2007, Uruguay became the second country in South America to select an HDTV standard. Europe's

DVB-T standard was preferred over Japan's ISDB or the U.S.'s ATSC on the assumption that DVB-T allowed the greatest possibilities for local value-added content.

Resources

- U.S. Embassy Contact: Robert Gorter, Sector Specialist
gorterrh@state.gov
www.buyusa.gov/Uruguay/en
- URSEC – Unidad Reguladora de Servicios de Comunicación
www.ursec.gub.uy
- Telfónica:
www.movistar.com.uy
- CTI: www.ctimovil.com.uy
- ANCEL: www.ancel.com.uy

Venezuela

Overview

U.S. exporters still face major hurdles from the aggressive market penetration strategies from Chinese firms and the inclination of the current government toward non-U.S. suppliers. The key development in this sector was been the purchase in 2007 of CANTV, the main telecommunication carrier and service provider in Venezuela by the Venezuelan government. This acquisition, along with the restructuring of all the government telecommunications apparatus, which includes CONATEL (National Commission of Telecommunications), and the recently created Ministry of the People's Power for Telecommunications and IT, stunned the Venezuelan telecommunications sector.

The Foreign Exchange Commission (CADIVI) has reported approving \$1,602 million in telecoms imports in 2007. This amount covers all investments reported by private entities, as well as government investment. Since November 2005, when the agreement between the Venezuelan government and China Great Wall industry Corporation (CGWIC) was signed to develop VENESAT-1 Program, the Venezuelan satellite industry has undertaken a more predominant role. Several steps have been achieved so far, such as: creation of the Venezuelan Spatial Center; ongoing training of 75 technicians and engineers at Beijing University; approval by the Uruguayan Congress to hand over its orbit to the Venezuelan satellite; and construction of teleports, control stations infrastructure and power supplies; among others.

China Great Wall Industry Corp is in charge of designing, manufacturing, testing and putting into orbit the VENESAT-1 for Venezuela. The planned telecommunications satellite will blast off from Xichang Satellite Launch Centre in Southwest China atop a CZ-3B rocket in August 2008. The satellite, designed with a mission life of 15 years, will be constructed by the China Academy of Space Technology, based on the country's DFH-4 Bus, China's new-generation telecommunications satellite platform. The total announced satellite cost is \$241 million.

Best Products/Services

- Wireless Internet solutions and last mile solutions
- Video, telephony, and data communications
- Front and back office solutions
- Added value IP solutions
- Added value wireless equipment
- Satellite equipment
- ADSL based solutions.

Resources

The Commercial Service office in Caracas closely monitors developments and opportunities in Venezuela's telecom sector. For more information on this sector, including Market Data, Best Prospects, Opportunities, and Contacts within the sector, U.S. exporters can contact Commercial Specialist Ms. Dalia Dorta at dalia.dorta@mail.doc.gov or our office at caracas.office.box@mail.doc.gov.

Vietnam

Overview

Vietnam's telecommunications industry is among the world's fastest growing markets. In 2007, the Information and Communications Technology (ICT) sector growth rate was double that of the average in the Asia region and triple that of the world average. In 2007, the cell phone and Internet broadband subsectors experienced market growth of upwards of 200%. The Government of Vietnam (GVN) has articulated its commitment to boosting the development of the ICT industry, particularly in telecommunications and Internet infrastructure development, software production, IT education promotion, and other forms of human capital development.

To meet the increasing market demand and tough competition after Vietnam's accession to WTO, Vietnamese telecom operators understand they need to enhance their competitiveness by adopting new technologies and enhancing human resource capabilities. They are seeking considerable transfer of technology and know-how via foreign involvement in the telecom sector, although the market is likely to open at a gradual pace in line with Vietnam's WTO commitments.

In 1988, just after the "doi moi" (renovation/opened door) policies carried out by the GVN Vietnam had less than 200,000 phone subscribers with a teledensity of 0.18 lines/100 inhabitants. In 2000, Vietnam grew to approximately 2.6 million fixed-line subscribers and 640,000 mobile subscribers. In 2006, new phone subscribers in Vietnam more than doubled the total number of subscribers added in the 25-year period of 1975-2000, and the number of 18.5 million new telephone subscribers added in 2007 tripled that of the period of the previous 3 years. According to Vietnam's Ministry of Information and Communications (MIC), as of December 2007, Vietnam has approximately 46.94 million telephone subscribers, with a teledensity of 55.22 lines/100 inhabitants.

The major technologies used in Vietnam include cable, satellite, and wireless cable. Major broadband networks are deployed via ADSL, VDSL, and leased lines. WiFi is deployed in the major cities, and local ISPs are seriously contemplating WiMax as a platform to popularize the Internet nationwide. So far four Vietnamese companies- VNPT, FPT, VTC and Viettel- are licensed to provide WiMax services and all have WiMax projects in the pilot stage. In terms of network convergence, voice/data networks are available nation-wide, while “triple play” networks (voice/data/video) and broadband services have been growing in the big cities. VoIP services are also expanding.

Telecom companies own the Internet infrastructure and provide VoIP services. There are also several privately owned VoIP providers, all of which lease lines from major telecom carriers. Such new technologies as 3G, even 4G, WiMax, mobile TV, and NGN have begun to be promoted in Vietnam and will become major trends in the development of Vietnam’s telecom industry. As a new member of the WTO, Vietnam will continue to implement tax cuts as part of its commitments under the Information Technology Agreement. Specifically, categories currently in a 5% tax bracket will decrease evenly to 0% in 2010; those in a 10% bracket will decline evenly to 0% in 2012 and those in a 20-30% bracket will go down evenly to 0% in 2014.

Some bumps in the road affecting the development of Vietnam’s telecommunications industry could result from excessively rapid growth, including price competition, problems with network connectivity and indifference to the fixed telephone market. The majority of imported telecommunications equipment is sold directly to local telecom service providers, to their subsidiaries or to broadcasters. Local distributors must have an import license for telecom equipment or should have an existing relationship with licensed trading companies. Selection of the right local partner is essential to maximize business development opportunities. As the high tech industry continues to develop in Vietnam, prices will continue to go down, investment capital will increase and the business environment will become more competitive. By entering the market via the road of equitization/privatization, foreign telcos will best approach this emerging market in a step-by-step fashion.

Networks: Telephone access is currently available to all communities nationwide. State owned Vietnam Posts and Telecommunications Group (VNPT) is the major landline telephone carrier in this market. As the traditional PSTN fixed telephone service is no longer a “cash cow” subsector, Vietnam’s telcos are instead developing wireless fixed telephone service solutions, especially for remote and isolated areas. Cell Phone Networks: As of June 2007, Vietnam had 22.87 million cell phone subscribers. Cell phone market share in Vietnam is currently divided between 6 network operators: Vinaphone (by VNPT), MobiFone (by VMS, a VNPT BCC), Viettel Mobile, and S-Fone (a Saigon Postel’s BCC with South Korean consortium SLD Telecom), EVN Telecom (by Electricity of Vietnam), and HT Mobile (a BCC between Hanoi Telecom and Hutchison). Viettel accounted for 32.8% market share with 7.5 million subscribers; MobiFone accounted for 28.1% market share with 6.4 million subscribers; Vinaphone accounted for 25% market share with 5.7 million subscribers; S-Fone accounted for 7.5%

market share with 1.7 million subscribers, EVN Telecom accounted for 5.3% market share with 1.2 million subscribers; and HT Mobile accounted for only 1.3% market share.

In terms of the technologies used in Vietnam's cell phone networks, six licensed mobile network operators run 4 GSM mobile networks (Vinaphone, MobiFone, Viettel, and Hanoi Telecom) and 2 operate CDMA mobile networks (S-Fone, and EVN Telecom). GSM mobile networks presently account for more than 95% of the cell phone market share. Investments by the major cell phone networks are: Vinaphone (\$130 million), Mobifone (\$456 million), S-Phone (\$230 million), EVN Telecom (\$630 million), and Hanoi Telecom (\$656 million). In late 2007, Hanoi Telecom applied to Vietnam's authorities for stopping its CDMA network and has changed its backbone to e-GSM technology on the frequency of 882-890 MHz and 927-935 MHz; The company's application for changing the technologies was recently approved by Vietnam's Prime Minister. A seventh cell phone network operator- the GTel Mobile Joint Venture- recently received project approval in principal from the Prime Minister and is working through administrative procedures with MIC to obtain a license for the 1.800 MHz frequency.

The JV between G-Tel (owned by the Ministry of Public Security, Russia's second biggest cell phone carrier- Vimpelcom and U.S. based Millenium Global Solutions Group) will run its network on GSM technology.

Internet: The Internet market has also developed rapidly in recent years. Internet usage has increased in popularity as evidenced by the entry of many Internet service providers (ISPs) into the market. As of December 2007, the number of Internet subscribers in Vietnam stood at 5.22 million, with an estimated 18.55 million people or 22.04% of the population using the Internet regularly and usage is expected to reach 35% in 2010. Broadband market demand has increased so rapidly that the current market supply is not sufficient to meet demand. In 2007, the broadband market growth rate reached as high as at 200% with 1.21 million broadband subscribers.

Presently, the country's total international and domestic connection bandwidth of Vietnam are 12,580 Mbps and 26,744 Mbps respectively. However, Internet density is not equally spread throughout the country; that is, 72.76% of Internet subscribers are in the two big cities of Hanoi and HCMC, 7 other cities and provinces including Hai Phong, Thua Thien-Hue, Quang Nam, Da Nang, Khanh Hoa, and Binh Duong account for 10.48%, while the rest of the 55 provinces account only for 16.76%. So far, Vietnamese authorities have licensed 7 IXPs (Internet infrastructure service providers), 18 ISPs (Internet access service providers), and 25 online service providers.

As of December 2007, Vietnam's Internet market shares of major Internet service providers were as follows: VNPT/VDC (54.78%), FPT (16.55%), Viettel (15.81%), EVN Telecom (4.77%), SPT (3.68%), and others (4.41%). In terms of the Internet broadband market share, the three top players are VNPT, FPT, and Viettel with 2.86 million, 863,000, and 825,000 subscribers respectively.

Satellite: Vietnam's first communications satellite called Vinasat was approved by the Government on October 18, 2005, and is scheduled to be launched in April 2008, providing roughly 15 years of service. Vinasat will be a geostationary satellite, employing eight C-band channels and 12 Ku-band channels to provide broadcast and telecommunications service (video, data, voice) to countries in the Asia-Pacific region such as Vietnam, Laos, Cambodia, India, Australia, Japan, Korea, part of China, and some other East Asia countries. The satellite principal ground station is located in Northern Vietnam (Que Duong, Ha Tay Province), and the back-up ground station is situated in the Southern Vietnam (Binh Duong Province). Broadcasting: Vietnam's broadcasting industry has developed rapidly in recent years. At present, Vietnam has one national television station (called Vietnam Television/VTV), one national radio station (called Voice of Vietnam/VOV) and four inter-provincial broadcasting stations. Additionally, each of the country's 64 provinces and cities has its own local broadcasting station. Apart from these broadcasters, other several new entrants include cable television, satellite (DTH/Direct-to-home) and on-line television providers. In terms of network convergence, voice/data networks are available nationwide, "triple play" networks (voice/data/video) and broadband services have been developing in the large cities. Moreover, 40% of the country's broadcasting facilities have been digitalized. The digitization covers up to 40% of country's technical facilities. Market growth in 2007 is estimated to reach approximately 28% and is expected to reach 30% in the next 2-3 years. Market size in 2007 is estimated to be valued at \$200 million. Vietnam has developed and maintained a large national transmission network including parallel digital Ku-Band and C-Band satellite carriages and hundreds of relay stations in order to ensure 90% of coverage of Vietnamese territory.

Best Products/Services

American suppliers should find excellent opportunities in almost every sub-sector, from equipment for telecom infrastructure to value-added services. Below is an analysis of the major best-prospect sub-sectors of the telecommunications sector in Vietnam. Fixed Telephone

Opportunities

American exporters will find tremendous opportunities in almost every sub-sector of the telecom/broadcasting industry.

Resources

Below are the lists of the major buyers for telecom equipment and services:

Fixed telephone service operators:

- VNPT (Vietnam Posts and Telecommunications Group)
- EVN Telecom (Electricity of Vietnam's Telecommunications Company)
- Viettel (Military Electronics Telecommunications Corporation)
- SPT or Saigon Postel (Saigon Posts and Telecommunications Service Corporation)
- Hanoi Telecom (Hanoi Telecommunications Company)

International telecommunications service operators:

- VNPT (Vietnam Posts and Telecommunications Group)
- EVN Telecom (Electricity of Vietnam's Telecommunications Company)
- Viettel (Military Electronics Telecommunications Corporation)

Long distancing international telephone service based on IP protocol operators:

- VNPT (Vietnam Posts and Telecommunications Group)
- EVN Telecom (Electricity of Vietnam's Telecommunications Company)
- Viettel (Military Electronics Telecommunications Corporation)
- SPT or Saigon Postel (Saigon Posts and Telecommunications Service Corporation)
- Hanoi Telecom (Hanoi Telecommunications Company)
- Vietnam Maritime Communications and Electronics Company (Vishipel)

Mobile communications service operators:

- VNPT (Vietnam Posts and Telecommunications Group)
- Viettel (Military Electronics Telecommunications Corporation)
- SPT or Saigon Postel (Saigon Posts and Telecommunications Service Corporation)
- Hanoi Telecom (Hanoi Telecommunications Company)
- EVN Telecom (Electricity of Vietnam's Telecommunications Company)

Internet services providers:

- VNPT (Vietnam Posts and Telecommunications Group)
- FPT (FPT Group)
- Viettel (Military Electronics Telecommunications Corporation)
- EVN Telecom (Electricity of Vietnam's Telecommunications Company)
- Hanoi Telecom (Hanoi Telecommunications Company)
- SPT or Saigon Postel (Saigon Posts and Telecommunications Service Corporation)
- OCI (One-Connection Internet Service Joint Stock Company)
- Netnam (Netnam Company)

Major buyers for broadcasting equipment and services:

- VTV (Vietnam Television)
- VoV (Voice of Vietnam)
- VTC (Vietnam Multimedia and Communications Corp.)
- 64 local provincial broadcasting stations (See www.vtv.org.vn/home/vtv/daidiaphuong.html), and other local cable TV, satellite, and on-line broadcasters.

Other Contacts:

- Nguyen Dzung, Commercial Specialist, U.S. Embassy Hanoi, Vietnam
E-mail: nguyen.dzung@mail.doc.gov
- Huynh Triet, Commercial Specialist, U.S. Consulate General in Ho Chi Minh City

- E-mail: triet.huynh@mail.doc.gov
- Vietnam's Ministry of Information and Communications (MIC)
www.mic.gov.vn
 - Vietnam's Ministry of Industry and Trade (MOIT):
www.moit.gov.vn
 - Ministry of Science and Technology (MOST):
www.most.gov.vn
 - Ministry of Planning and Investment (MPI):
www.mpi.gov.vn
 - Vietnam Internet Network Information Center (VNNIC):
www.vnnic.net.vn

Yemen

Overview

Telecom is one of the most promising sectors available in Yemen for trade and investment. A recent regional study showed that the Yemeni GSM (Global System of Mobile) market is growing very rapidly compared to the markets in other Arab countries. Currently three GSM-mobile companies (Sabafon, MTN and HitsUnitel), are operating with exclusivity contracts from the Ministry of Communications. The first two companies launched mobile-phone services in early 2001 after winning 15-year licenses at a cost of \$10 million each in mid-2000. The expansion of their network, which currently covers about 60% of the population, by a French firm, Alcatel, is continuing. In May 2004, the Ministry of Telecommunications announced operations for a third mobile telecom provider, Yemen Mobile, which was owned exclusively by the Ministry until 55% of the company's shares were put for sale in mid-2006. Yemen Mobile started operations on the CDMA (code division multiple access)-protocol. Yemen is the only country to utilize the standard in the Middle East. There is no separation of power between the regulatory function of the Ministry and the state-owned competitor company, Yemen Mobile, which should cause concern for any international telecom investor.

Nonetheless, by informal estimates, the market has grown from some 8,000 subscribers in the first year to an estimated 1.3 million in 2005. The number of internet surfers rose to 110,000 in 2006, compared to 3800 in 1991. According to the Central Statistical Organization's Report of 2004, there were more than 798,136 telephone land lines. In 2005, UNITEL was awarded a contract to operate Yemen's third GSM-mobile company, but has been unable to raise the funds necessary to pay for the contract, despite repeated extensions from the ROYG. The contract award was criticized by international observers because, although UNITEL was the highest bidder, it had no experience in mobile telephone operation and no significant financial backing. HitsUnitel (Y) launched its operation in December 2007 at a cost of \$10 million.

Best Products/Services

As is common in technologically evolving countries, ongoing opportunities will continue to open as the mobile telecommunications networks out-pace land line telephone operations. Demand is expected to double according to sources in the network project

implementation sector. The marketing of more advanced services has also reached the consumer in Yemen with the existing operators now offering services such as multimedia messaging, internet browsing, camera phones, and friends and family group rates.

Opportunities

It appears from its promotional strategy that Yemen Mobile is targeting low income customers. Since purchasing power in Yemen is low, Yemen Mobile offers CDMA handsets with full accessories to public sector employees who sign agreements authorizing the company to deduct a certain amount from their salary (installment selling). This technique has captured a wide market and created more demand for handsets.

As Yemen Mobile builds its networks, the demand for CDMA handsets, accessories, towers, switches, and other equipment related to creating a new network continues to increase. In May, 2006, the Public Telecommunication Corp announced that it has signed a \$40 million project to link Yemen to the world maritime cable network, which would enable Yemen to attain direct world telecommunication and internet services and meet the increasing demands in this sector. Falcon Telecom was awarded the deal.

IV. Trade Events

Trade events, such as trade shows, trade missions and catalog shows, offer excellent opportunities for face-to-face interaction with foreign buyers and distributors. Of the many U.S. and international events held throughout the year, some are vertical (single industry theme) and some horizontal (many industries represented). The events organized or approved by the U.S. Department of Commerce can be especially useful for first-time or infrequent participants – they require less lead time to register and typically involve more handholding.

The Trade-Event Scheduling Web sites listed below allow selective searches for upcoming events by industry, location, type and date. They typically provide the event organizer, event descriptions and costs, and people to contact for more information.

To find upcoming events for U.S. Telecommunications Equipment & Services, use industry search terms relating to Telecommunication or Communications.

Schedules for U.S. Government Organized or Sponsored Events

Domestic USDOC Events: www.export.gov/comm_svc/us_event_search.html

International USDOC Events: www.export.gov/comm_svc/us_event_search.html

Schedules for Commercially Organized Events

TSNN (www.tsn.com/)

ExpoWorldNet (www.expoworld.net/)

Exhibition Center - Foreign Trade Online (www.foreign-trade.com/exhibit.htm)

BizTrade Trade Show Directory (www.biztradeshows.com)

Exhibitor Online Trade Show Directory (www.exhibitoronline.com/shows)

Exhibition Center - Foreign Trade Online (www.foreign-trade.com/exhibit)

V. Available Market Research

Telecommunications Equipment & Services

The reports listed below provide more detailed information about the market for the Telecommunications Equipment & Services in the listed countries, such as demand trends, the competition, business practices, distribution channels, promotional opportunities, and trade barriers. These market research reports are written by resident U.S. commercial staff in each country.

All the listed reports, as well as newer reports released after this publication, are accessible on line, at no cost, from www.buyusainfo.net/adsearch.cfm?loadnav=no

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Telecom Services - Fixed-Mobile Convergence 2007	Argentina	12/7/2007
Wireless Telecom Services - Market Overview 2007	Argentina	9/21/2007
IT Security Market	Australia	8/7/2008
IT Distribution Channel	Australia	4/28/2008
The Belgian Telecom Market	Belgium	7/31/2007
Brazil Telecommunications Market	Brazil	2/19/2008
IT Clusters in the state of Minas Gerais and Northeast of Brazil	Brazil	2/1/2008
Broadband Connectivity	Brazil	12/13/2007
Broadband Overview	Brazil	6/26/2007
Residential Broadband Subs total 10.7 million in November	Brazil	1/26/2007
Bulgaria: Telecommunication Services Market	Bulgaria	12/10/2007
Canadian Geomatics/Geospatial Industry	Canada	8/9/2007
China: Smart Phone Market	China	9/26/2007
China: Broadcast and Telecom Market	China	2/16/2007
Update on the Smart Village	Egypt	2/21/2008
Egypt: Telecommunication Market in Alexandria	Egypt	2/20/2008
Call Centers	Egypt	1/27/2008
Egypt: Wireless Networks	Egypt	5/31/2007
Egypt: Convergence of ICT & Broadcasting	Egypt	3/29/2007
The Palestinian Information and Communications Technologies Sector	Gaza Strip; West Bank	7/14/2008
Germany: Mobile Communications 2008	Germany	4/7/2008
Germany - Broadband Access Equipment	Germany	3/9/2007
Greece: ICT Market - Brief Overview	Greece	5/7/2008
Mobile Communications	Greece	6/11/2007

Haiti Telecommunication Market	Haiti	7/23/2007
Hong Kong: Telecommunications & Broadcasting	Hong Kong	8/25/2008
Indonesian Cellular Services	Indonesia	8/6/2008
Broadcasting Services	Indonesia	6/4/2008
Indonesia: Cellular Services	Indonesia	8/22/2007
Italy: ICT Trends	Italy	10/1/2008
Telecommunications Market	Japan	2/29/2008
Broadband Market	Japan	11/30/2007
Kazakhstan: Developments in the IT & Telecommunications Sector	Kazakhstan	3/10/2008
Kazakhstan: Telecommunications Market	Kazakhstan	12/27/2007
Kenya: Wireless Industry	Kenya	7/2/2008
Malaysia: Telecommunications and Broadcasting	Malaysia	2/22/2007
Fixed, Mobile and VoIP Telecommunications	Mexico	7/10/2008
Fixed and Mobile Telecommunications Market in Mexico 2007	Mexico	4/30/2007
Healthcare IT in The Netherlands	Netherlands	9/8/2008
Trends in the ICT Market	Norway	2/2/2008
Trends in the ICT Market	Norway	1/23/2008
Wireless Telecommunications Equipment	Panama	11/14/2007
Philippines: Telecom and Broadcast Industry Overview	Philippines	2/4/2008
Overview of the Information Technology and Telecommunications Market	Poland	2/20/2007
Russia: Roadmap for Importing Encrypted Products	Russia	7/9/2008
Broadband Market in Russia	Russia	3/2/2007
Singapore Broadband Market	Singapore	9/1/2008
Wireless Communications Market	Singapore	5/16/2007
Slovakia: Internet Services	Slovakia	8/30/2007
Telecom Convergence Industry	South Korea	9/11/2008
Spain: Mobile Virtual Network Operators (MVNO)	Spain	4/17/2007
Sweden: Telecommunication Services	Sweden	9/11/2007
Radio Frequency Identification (RFID)	Taiwan	9/18/2008
Worldwide Interoperability for Microwave Access (WiMAX)	Taiwan	9/5/2008
Mobile TV	Taiwan	5/31/2007
Taiwan: Broadcast and Telecommunications	Taiwan	3/9/2007
Wireless Communication Market Brief 2008	Thailand	9/24/2008
Telecommunication Market Brief 2007	Thailand	9/25/2007
Broadcast Industry in Thailand	Thailand	6/4/2007
3G Developments in the Turkish GSM Cellular Market	Turkey	9/11/2007
Update on the Ukrainian ICT Market	Ukraine	9/10/2007
Uzbekistan Telecommunications Report	Uzbekistan	2/14/2008
Vietnam: Telecommunications and Broadcasting	Vietnam	2/26/2007

VI. APPENDIX

Products in Telecommunications Equipment & Service, by Schedule B/HS Code HS 8517 & HS 903040 Items

Schedule B/HS Code	
851711	Cordless telephones
851711	Interphones, handset
851711	Line telephone sets with cordless handsets
851711	Telephone sets, line, with cordless handsets
851711	Telephones, cordless
851712	Cellular radiotelephones for public cellular radiotelecommunication service
851712	Radio telephones for public cellular radiotelecommunication service
851718	Telephones, videophones
851718	Videophones
851732	Stock tickers, wire
851732	Teleprinter units, wire
851761	Modems (modulator-demodulators)
851761	Modems, used with adp machines
851761	Telegraphic apparatus, for carrier-current line systems
851761	Telegraphic apparatus, for digital line systems
851761	Telephonic apparatus, for carrier-current line systems
851761	Telephonic apparatus, for digital line systems
851762	Control panels, switching, telephone
851762	Controls, supervisory, telephone
851762	Intercom systems, wire type (telephone)
851762	Inter-communication systems, telephone network
851762	Key system switching apparatus, telephone
851762	P.A.B.X. switchboard
851762	P.A.X. switchboard
851762	P.B.X. switchboard
851762	Radio frequency transmitters
851762	Switchboards, telephone
851762	Switching devices, telephone
851762	Telegraph apparatus, except carrier current line or digital line systems
851762	Telephone switchboards
851762	Telephone switching devices
851762	Telephonic apparatus, except carrier current line or digital line systems
851762	Telephonic apparatus, intercom systems
851762	Telephonic switching apparatus, central office
851762	Telephonic switching apparatus, electronic key system
851762	Telephonic switching apparatus, private branch exchange
851762	Transmitters, radio frequency, all types
851769	Pagers (radio receiver type)
851769	Paging alert devices

851770	Circuits, oscillator, telephone switchboard
851770	Feeder panels, switching, telephone
851770	Keys, telephone
851770	Oscillator circuits, telephone
851770	Ringers, telephone
851770	Telephone and telegraph equipment parts
903040	Cross talk meters
903040	Distortion factor meters
903040	Gain measuring instruments
903040	Instruments and apparatus designed for telecommunications
903040	Meters, cross talk
903040	Meters, megohm
903040	Meters, radio interference
903040	Psophometers