

# Telecommunications in Central and Eastern Europe

# 6

## CHAPTER



*Successful  
development of  
market economies  
and democratic  
governments  
depends on modern  
telecommunications*

THE DRAMATIC POLITICAL DEVELOPMENTS that have transformed Central and Eastern Europe (CEE) appear to be closely linked to communications. Radio and television broadcasting provided a window on Western democracies and markets, and their appeal proved difficult to resist compared to Stalinist central planning and political structures. Many observers predict that the successful development of competitive market economies and free democratic organizations will depend critically on the installation and availability of modern telecommunications services. "Improved communication channels will assist the free flow of information and stimulate economic growth."<sup>2</sup>

Improved telecommunications capability is presumed to be positively correlated with economic development, the strengthening of democracy, the broadening of culture, and greater educational opportunities. However,

exactly how telecommunications fits into economic, social, and political development is often not placed in context. The absence or dilapidation of the telephone network is not the only problem in Central and Eastern Europe; many other urgent needs, such as energy production and environmental cleanup, will require attention and resources. Thus telecommunications, while critically important to these countries, competes with other needs.

Each country has distinct political and economic characteristics that lead to differing strategies on future economic development, legislation, and the role of private enterprise.~ The challenge these governments face is to carefully match their societies' communications needs with the desired characteristics of their economies, societies, and politics, in order to facilitate the transition from centrally planned socialist regimes

<sup>1</sup>"Finding Their Voice," *The Economist*, Feb. 8, 1992, p. 74. See also "Please Stand By," report of the State Department Task Force on Telecommunications in Eastern Europe. Observers say that the telephone, the fax, and the photocopier were critical in the erosion of Soviet control. James O'Toole, "Information and Power: Social and Political Consequences of Advanced Tele/Computing Technology," *The Aspen Institute Quarterly*, vol. 3, No. 4, autumn 1991, pp. 42-73. O'Toole notes that "the unprecedented events in the communist world were seized upon . . . as illustrative of the positive consequences of the new information technologies," but cautions that technology is not a driver—as it is often portrayed—so much as an enabler: "new technologies are capable of [destroying power structures] if humans choose to apply them to that end" (p. 44). Further, O'Toole argues that the "bimodal characteristics" of new communications technologies—i.e., they are simultaneously centralizing and decentralizing, empowering and controlling—are rarely well understood: "It would require an unconscionable act of intellectual selectivity to portray technology as simply either the defender or usurper of freedom" (p. 43).

<sup>2</sup>"Central and Eastern Europe: The Problems of Reconstruction," *Telecommunications*, October 1991, p. 158.

<sup>3</sup>For example, Erno Pungor, the Hungarian minister responsible for technological development, told the Office of Technology Assessment (OTA) that while telecommunications was clearly important to economic development, energy and environmental problems will also require significant resources. Presentation at the Hungarian Embassy, Washington, DC, Dec. 11, 1991. A theme running through the 1991 International Telecommunications Union Regional Development conference in Prague was the question of how to emphasize government assistance to telecommunications. U.S. concerns at the Conference were, as a consequence, to discourage the participants from establishing too strong a role for anticompetitive State telecommunications monopolies.

to market-oriented capitalism. Developing a telecommunications modernization strategy is one step.

In the past, public telecommunications has not been a priority in these countries. Information has been tightly controlled, and development of public telecommunications rigorously curtailed. As a consequence, telecommunications networks cannot meet the requirements of contemporary social and economic interaction. Recognizing the critical importance of communications to economic activity, however, most of these countries have begun to develop ambitious plans for basic telecommunications system expansion and modernization.<sup>4</sup>

This chapter will characterize the state of telecommunications in the CEE region and discuss strategies for modernizing the networks, in order to identify implications for the telecommunications industry and policymakers in the United States. Growing ties between East and West are making effective telecommunications critical for the conduct of business and public affairs. The chapter concludes, however, that the U.S. Government, and in particular the U.S. Congress,

has little leverage over developments in those countries, apart from trade, foreign aid, and technical assistance tools already in use.

## Defining and characterizing Central and Eastern Europe

Eastern Europe has for many years been the shorthand reference for those countries in the political/military and economic sphere of the Soviet Union,<sup>5</sup> i.e., under the Warsaw Pact and the Council for Mutual Economic Assistance (CMEA or Comecon). Comecon was the economic trading bloc set up by the Soviet Union (Comecon is now defunct). For the most part, Eastern Europe was usually defined by geography (see figure 6-1). The countries of the region themselves refer to the area as Central and Eastern Europe, which conveys a degree of differentiation to which the United States has until recently not been sensitive. Though there is consensus that Poland, Hungary, Czechoslovakia,<sup>6</sup> Romania, and Bulgaria are members of this group, there is some ambiguity about how to classify other countries, such as Albania, the republics of the former Soviet Union, and the

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<sup>4</sup>The most advanced planning is in Hungary, Czechoslovakia, and Poland; Bulgaria and Romania have also begun to develop plans. Albania lags behind. While Yugoslavia had been actively modernizing its network, the breakup of the republic has disrupted these efforts.

<sup>5</sup>The original signatories to the Warsaw Treaty of Friendship, Cooperation, and Mutual Assistance signed in May 1955 included Albania, Bulgaria, Czechoslovakia, East Germany, Hungary, Poland, Romania, and the Soviet Union; China was an observer to the conference. Albania, however, formally withdrew from the treaty following the 1968 invasion of Czechoslovakia, for which it refused to commit troops. Romania, too, did not participate in the "Prague Spring" invasion and began to distance itself from the Pact.

<sup>6</sup>Czechoslovakia, or more formally the Czech and Slovak Federal Republic, was split into the Czech Republic and Slovakia in January 1993, following a national referendum on the political future of the Federation. The term Czechoslovakia will be used here where appropriate.

<sup>7</sup>Because Yugoslavia was not a full member of Comecon, it was not always considered part of Eastern Europe. At the time of this writing, the status of Yugoslavia is highly uncertain. The disintegration of the Soviet Union and the independence of the Baltic republics has occurred so recently that they have only just begun to act as independent nations. Until its integration into the Federal Republic of Germany in 1990, the German Democratic Republic (formerly East Germany) was considered part of Eastern Europe.

remains of Yugoslavia.<sup>7</sup> In effect, Eastern Europe is as often determined by politics and economics as by geography. For the purposes of this chapter, the focus is mainly on the countries that were not part of the former Soviet Union.

### Regional differences

Because the economic and political ties between the United States and the countries of this region are growing, it is necessary to be sensitive to the significant differences among and between the countries, especially regarding their economic transformation. Czechoslovakia, Poland, and Hungary are expected to move successfully toward modern market economies and democracy. Both the European Community (EC) and the European Free Trade Association (EFTA) have negotiated trade agreements with these three countries, anticipating eventual integration within the economic and political West.<sup>8</sup> The United States has begun to view them as it does other trading partners; the United States Trade Representative (USTR) annual report on foreign trade barriers listed Poland, Hungary, and Czechoslovakia for the first time in 1992.<sup>9</sup> President George



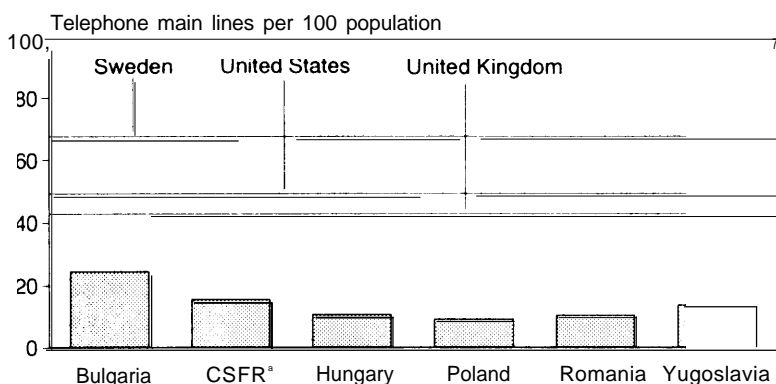
SOURCE OFFICE OF TECHNOLOGY ASSESSMENT, 1993

Bush extended to Hungary and Czechoslovakia permanent most-favored nation (MFN) status in April 1992; this had previously been

Figure 6-1.  
Central and Eastern  
Europe

<sup>8</sup> Poland, Czechoslovakia, and Hungary signed similar declarations of intention with both the EFTA and the EC, that stipulate a 10-year transition period eventually leading to free trade. The three countries "signed agreements forging closer commercial and political ties" with the EC in December 1991, which will dovetail with EFTA negotiations, which are expected to be made official in the spring 1992. "EC-Central Europe Association Agreements Signed," *Europe Now, A Report*, U.S. Department of Commerce, International Trade Administration, winter 1991-92, p. 4. "EFTA Hopes to Sign Free-Trade Pacts With Three Eastern Nations by April," *International Trade Reporter*, vol. 9, No. 10, Mar. 4, 1992, p. 404.

<sup>9</sup> Eduardo Lachica, "Report on Trade Barriers Says U.S. Made Some Inroads in Japan, Mexico," *Wall Street Journal*, Mar. 30, 1992, p. A18. The *New York Times* notes that the USTR's annual report, which is required by Congress, is "a propaganda exercise" as well as a harbinger of impending trade investigations. Keith Bradsher, "U.S. Adds 7 Countries to Trade Barrier List," *New York Times*, Mar. 30, 1992, p. D2. Meanwhile, Czechoslovakia, Poland, and Hungary are reducing and in some cases eliminating tariffs on products imported from the EC, in accordance with association agreements between the EC and the countries. "C.S.F.R. Tariffs on EC Exports Reduced, Eliminated Under Agreement," *International Trade Reporter*, vol. 9, No. 13, Mar. 25, 1992, p. 536.



SOURCE: ORGANIZATION FOR ECONOMIC COOPERATION AND DEVELOPMENT, INTERNATIONAL TELECOMMUNICATION UNION, 1992.

**Figure 6-2.**  
**Telephone**  
**Penetration Levels:**  
**A Comparison**  
(1991)

\* Czech and Slovak  
Federal Republic

subject to annual review.<sup>10</sup> The prospects for MFN status for Albania, Bulgaria, Romania, political units of the former Yugoslavia, the Baltic republics, and republics of the Commonwealth of Independent States and Georgia are less clear.

### **legacy of Soviet economic and trade policies**

The West generally had a false perception that the countries behind the Iron Curtain were economically and socially integrated. The Soviet Union-dominated trade bloc,

Comecon, was dissolved in January 1991 under pressure from the countries of Eastern Europe to substitute the barter system with a hard-currency-based trading system. While some trade and professional bonds were forged as a result of years of participation in Comecon,<sup>11</sup> overall the structure of trade within the organization minimized the economic interaction between the countries and instead imposed a system in which the Soviet Union supplied these countries with energy and raw materials and in return they sold manufactured goods back to the U.S.S.R. The pattern of international telephone lines shows clearly the lines of dominance, and the extent to which the individual countries of Comecon were cut off from one another.

The former Soviet Union used its energy supply to force a set of bilateral barter trading systems on the CEE nations.<sup>12</sup> The Soviet Union exchanged cheap oil and other raw materials for machine goods and food, and coordinated the trading of manufactured goods throughout Central and Eastern Europe.<sup>13</sup> Early in the democratization process begun in 1989 it became apparent that as the Soviet economy deteriorated, CEE econom-

<sup>10</sup> "President Signs Measure Extending Permanent MFN to Hungary, C. S. F.R.," *International Trade Reporter*, vol. 9, No. 16, Apr. 15, 1992, p. 700.

<sup>11</sup> Comecon consisted of Poland, East Germany, Czechoslovakia, Hungary, Romania, Bulgaria (Yugoslavia participated as an associate member), as well as Mongolia, Cuba, and Vietnam. A Congressional Research Service report suggested that being behind the Iron Curtain together for many years spawned fairly close and collegial relationships among the nations of the region. See Francis T. Mike, "East European National and Ethnic Relations in the 1990s," *CRS Review*, vol. 11, Nos. 3-4, March-April 1990, p. 13. In spite of the tremendous ethnic tensions that characterize the region now, and have for centuries past, it may be true that Comecon tempered these ethnic and religious conflicts by forging professional ties where previously they did not exist. Now that Comecon has dissolved, some ties may remain among professional communities.

<sup>12</sup> For a good discussion of how trade was handled within the Comecon system, see Martin Schrenk, "Whither Comecon?" *Finance & Development*, September 1990, pp. 28-31.

<sup>13</sup> "Comecon: An Idea Whose Time Has Gone," *The Economist*, Jan. 13, 1990, p. 46. Pal Horvath, general manager and director general of the Hungarian Telecommunications Company, told OTA that over 70 percent of Hungarian telecommunications equipment was shipped to the Soviet Union. OTA interview, Budapest, Hungary, Oct. 7, 1991.

ics were being hurt as well, due to this trading system centered on Moscow. CEE countries now see that they must diversify trade relationships, with one another as well as with the outside world, if they want to develop rapidly.<sup>14</sup>

## The condition of telecommunications in Central and Eastern Europe

Telecommunications in Central and Eastern Europe are in dismal disarray. Communications networks in these countries are several generations behind the West technologically and cannot provide the services required for these countries to achieve economic parity with the West. Though telecommunications operators are aggressively modernizing facilities for important business and government centers, these networks mainly rely on decades-old transmission and switching equipment, and have few international connections, even among CEE coun-

tries. Telephone penetration levels are low, the number of disconnections is high, and waiting lists for service are long.

Digital switching technology has only very recently been introduced. Most of the networks consist of electromechanical or semielectronic technologies, such as crossbar or step-by-step switches, that are antiquated by Western standards. For example, electromechanical crossbar switching technology comprised 47 percent of Czechoslovakia's telecommunications switching infrastructure in 1991, and electromechanical step-by-step switches accounted for 48 percent of capacity; only 3 percent of exchange capacity was digital, and nearly all of that was used in international service.<sup>15</sup>

Levels of telephone penetration are significantly behind those in Western European countries (see figure 6-2).<sup>16</sup> Bulgaria, with the highest telephone density of Eastern European countries,<sup>17</sup> in 1991 had approximately 25 main lines per 100 people, while

*Central and European telecommunications cannot now provide services required for their countries to develop economically.*

<sup>14</sup> Some observers advocated that foreign assistance to the CEE countries was best delivered via money sent to the USSR, which could then continue to buy goods and services from the CEE countries.

<sup>15</sup> Calculated from data in International Telecommunication Union, "Summary of the Survey on Present State and Plans for Telecom Development in Central and Eastern Europe," European Regional Development Conference (EU-RDS), Prague, Nov. 19-23, 1991, doc. no. EU-RDC-91/26-E (Geneva: International Telecommunication Union, 1991), table 3, p. 5, hereinafter referred to as ITU Summary.

<sup>16</sup> Comparative data in this report are drawn from International Telecommunication Union, *European Telecommunications Indicators*, European Regional Development Conference (EU-RDS), Prague, Nov. 19-23, 1991, doc. no. EU-RDC-91/46-E (Geneva: International Telecommunication Union, 1991), hereinafter referred to as ITU Indicators, 1990; and International Telecommunication Union, *European Telecommunications Indicators*, (Geneva: International Telecommunication Union, October 1992), hereinafter referred to as ITU Indicators, 1991.

<sup>17</sup> ITU Indicators, 1991, op. cit., footnote 16, table 5, p. 5. This measure, which gauges the number of telephone mainlines per 100 people, is the standard international measure for telephone penetration. As a rule, this measure fairly accurately depicts the relative development and extension of a country's communications network. Svetoslav Tinchev, chief expert, Digital Switching and Network Planning, PTT Ministry, Bulgaria, oral presentation, noted in "Report of a Seminar With Central and Eastern European Countries," in *Policy Dialogue on Telecommunication Development: A Seminar With Central and Eastern European Countries*, held in The Hague, Apr. 22-24, 1991, doc. no. DSTI/ICCP/TISP(91)7 (Paris: Organization of Economic Cooperation and Development, June 4, 1991), p. 5.

**Figure 6-3.**  
**Waiting Time for**  
**Telephone Service,**  
**1992**

<sup>a</sup>Czech and Slovak  
Federal Republic



SOURCE: INTERNATIONAL TELECOMMUNICATION UNION, 1992.

the average for the region was 13.<sup>18</sup> By comparison, the number of main lines per 100 people in the industrialized countries ranges from 34 (Spain) to 69 (Sweden), with the average for the developed countries of Western Europe at 43. Levels in Canada and the United States hover around 50. (See figure 6-2.)

As a consequence, waiting lists for connection are lengthening, and some areas have no service at all. In Poland, for example, the waiting list for a telephone grew from around 1 million in 1981 to 2.3 million in 1991. On average, waiting lists for the CEE countries increased by 9 percent a year between 1981 and 1990; in Western Europe these lists shrank by 12 percent over the same period.<sup>19</sup> The CEE average waiting time for telephone installation is 11.5 years and it is not uncommon to hear accounts of delays as

much as 30 years, compared with less than 2 weeks in Western Europe. These figures probably understate true demand, which is likely to grow as the waiting lists shrink and people who were not bothering to sign up see better chances of getting connected. (See figures 6-3 and 6-4.)

Neglect is most critically manifest in the limited range and poor quality of services available. Lines only marginally reliable for basic voice service are unreliable for data and facsimile transmission. The number of annual faults reported per 100 lines ranged from 18 (in Croatia) to 97 (in Romania); by contrast, reports of faults in Sweden were 10 per 100 lines, in France 9, and in the United Kingdom 15. In Romania, 70 percent of calls were not completed, and in Hungary, 45 percent of local calls failed to go through. (See figure 6-5.)

Services available to businesses and residences are limited, but are growing fast. In 1990 there were only 28,000 fax machines in all of Central and Eastern Europe (compared with over 3.3 million in Western Europe), but by 1991 there were more than 72,000 (Western Europe had nearly 3.9 million in 1991). In 1990 Western Europe had 3.4 million mobile phone subscribers, and in 1991 4.3 million, while in Central and Eastern European countries there were only 4,500 in 1990, but 9,000 in 1991. Public packet-switched data networks are barely off the drawing boards in Central and Eastern

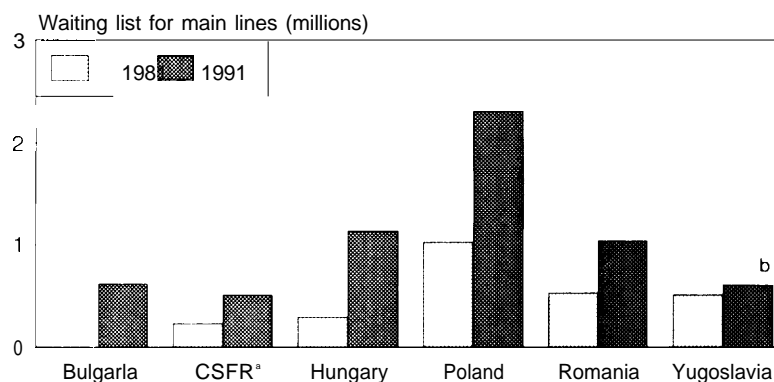
<sup>18</sup> Bulgaria expanded numbers of telephones at the expense of quality of service and infrastructure investment. For example, in 1990, 48 percent of local calls were not completed in Bulgaria, compared with less than 2 percent not completed in Western Europe; Bulgaria invested only \$5.60 per capita in its network, compared with \$20.00 per capita in Hungary and \$132 per capita in Western Europe. These levels improved markedly by 1991: Bulgaria spent \$28 per capita, Hungary spent \$30, and the Western European average had dropped to \$128. See 1990 data in ITU Indicators, 1990, op. cit., footnote 16, table 20, p. 20; and 1991 data in ITU Indicators, 1991, op. cit., footnote 16, table 30, p. 30.

<sup>19</sup> See data in ITU Indicators, 1990, op. cit., footnote 16, table 7, p. 7.

Europe, with 317 subscribers in Hungary and Bulgaria in 1990, but 761 in 1991, while Western Europe has an extensive X.25 service in place, with over 337,000 subscribers in 1991.

Finally, productivity of telecommunications operators varies a great deal between the two parts of Europe: in 1991, the number of main lines per employee in Central and Eastern Europe was 67, up from 58 in 1990, compared with 158 in Western Europe in 1991 and 152 in 1990.<sup>20</sup> (See figure 6-6.)

Services to rural communities have been especially poor. The telephone network is often concentrated in the major cities and administrative centers, so the outlying rural areas have much lower telephone penetration than suggested by the national averages.<sup>21</sup> For example, approximately 7,500 Polish villages are without telephones, and nearly two-thirds of those villages with phones are served by manual switches;<sup>22</sup> service effectively stops when the switchboard operator leaves for the evening. The same situation can be found all over Central and Eastern Europe. While several CEE telecommunications authorities have told the Office of Technology Assessment (OTA) that rural service is a priority, the focus of moderniza-



SOURCE INTERNATIONAL TELECOMMUNICATION UNION, 1992

tion thus far has been overwhelmingly on business users, on the presumption that businesses can absorb the increased costs.<sup>23</sup> (See figure 6-7.)

The case of Hungary illustrates the condition of CEE telecommunications networks. The average wait for telephone connection over the past two decades has been 12 years, and even then there is considerable difficulty in securing a dial tone or in completing a call.<sup>24</sup> There were only 10.9 telephone main lines per 100 people in 1991, and one source indicated that three-quarters of these are in the government.<sup>25</sup> Only 7 percent of switches were digital. While in the main cities 90 percent of lines had automatic switching in

Figure 6-4.  
Waiting Lists for  
Service, 1981 and 1991

a Czech and Slovak  
Federal Republic  
b 1990

<sup>20</sup> Data for 1990 taken from ITU Indicators, 1990, op. cit., footnote 16; and ITU Indicators, 1991, op. cit., footnote 16, table 24, p. 24.

<sup>21</sup> Jürgen Müller, "Closing the Capacity and Technology Gap In Eastern European Telecommunications," European Regional Development Conference (EU-RDC), Prague, Nov. 19-23, 1991, doc. no. EU-RDC-91/8-E (Geneva: International Telecommunication Union, 1991), p. 1.

<sup>22</sup> Jürgen Müller, op. cit., footnote 21, p. 1.

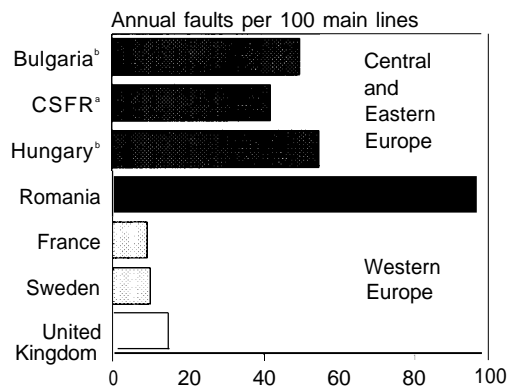
<sup>23</sup> OTA interview with Pal Horvath, op. cit., footnote 13. Horvath claims this is demanded by Hungarian banks, whose loans provide 50 percent of the financing.

<sup>24</sup> OTA noted on a trip to Hungary that want ads for apartments to rent usually specify "has telephone" even before mentioning how many rooms are in the apartment.

<sup>25</sup> OTA interview with Andras Sugar, general manager, and John Handley, operations director, WESTEL (a U.S./Hungarian cellular telephone joint venture), and Jim Russell, manager of direct distribution, U.S. West Newvector Group (U.S. West is the U.S. joint venture partner in WESTEL), Budapest, Oct. 8, 1991.

Figure 6-5.  
Service Quality:  
Telephone Faults, 1991

<sup>a</sup>Czech and Slovak  
Federal Republic  
<sup>b</sup>1990



SOURCE INTERNATIONAL TELECOMMUNICATION UNION, 1992.

1990, automatic dialing was available to only 50 percent of main lines in rural areas.<sup>26</sup>

*In a great number of Hungarian villages the telephone provides a link with the outside world only in the daylight hours. . . 78 percent of the 2,024 main exchanges operating in Hungary at the end of 1988, for example, were manually operated exchanges representing 50 year old technology. . . [which means that] 78 percent of the locations in Hungary are not connected to long-distance dialing, 60 percent of the cities in Hungary are not connected to domestic long-distance dialing and 80*

*percent are not connected to international long-distance dialing.*<sup>27</sup>

### Causes of decay

In the political environment of Central and Eastern Europe until recently, information was deliberately and tightly controlled and the development of public telecommunications services and facilities was rigorously curtailed. International and even much regional direct dialing was prohibited, circuits were extremely limited in number and quality, and telephone books were made classified documents.<sup>28</sup> Horvath of the Hungarian Telecommunications Company (HTA) told OTA that the Marxist government had deliberately neglected infrastructure and discouraged communications except among the few authorized decisionmakers. In the early 1980s there was a debate over the importance of telecommunications.<sup>29</sup> According to Horvath, the new leaders do not yet realize that poor communications “is a deadly brake on the economy.

Telephony and other services were not considered industrial production in socialist economics and, since they had no quantifiable output, were seen as parasites on the real industrial economy.<sup>30</sup> Investment priorities

<sup>26</sup> OTA interview with Pal Horvath, op. cit., footnote 13. Horvath suggests that because more revenue will have to be raised to cover operating and modernization expenses, rates will rise, and demand for telephone service will therefore fall. See also Eva Ehrlich, “Telecommunications Developments in Eastern Europe,” Budapest *F/GYELO*, July 18, 1991 as cited in *JPRS Telecommunications Report*, Oct. 25, 1991, p. 57. The author notes that “there are only ‘quasi telephones’ “ due to the unreliability of the vastly overloaded and outmoded network. The half million people on the waiting list for a main line connection in 1990 probably underestimates the true number of people seeking service by 50 to 80 percent.

<sup>27</sup> Eva Ehrlich, op. cit., footnote 26.

<sup>28</sup> Tim Kelly, “Telecommunications in the Rebirth of Eastern Europe,” *The OECD Observer*, No. 167, December 1990, pp. 19-20.

<sup>29</sup> OTA Interview with Pal Horvath, op. cit., footnote 13, confirmed by Peter Eisler, general manager, Hungirocom Telecommunications Ltd., Oct. 9, 1991, Budapest.

<sup>30</sup> Measuring service productivity has been difficult for classical and neoclassical economics as well.

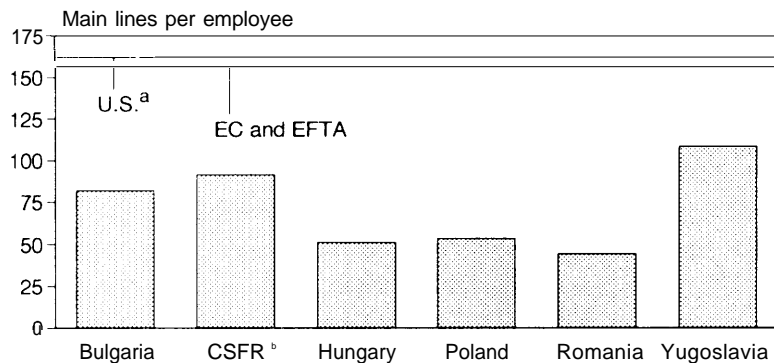


were not high for telecommunications services. (See table 6-1.) Much of the little spending that did occur, according to a World Bank study,<sup>31</sup> went to new lines rather than maintenance, so figures on CEE telephone density mask poor service and antiquated and nonperforming equipment, as the figures on line faults and completed calls show.

The network deteriorated as a result, necessitating the parallel development of ‘closed purpose networks’ for the more sensitive government activities such as the defense and interior ministries. For example, in the former Soviet Union three separate telephone networks existed: one for a very small circle of the political and military elite (for which special keys are needed), another for the party bureaucracy, and a third for the general public.<sup>32</sup>

Despite the lack of reinvestment, telecommunications nevertheless proved a reliable money maker. Following the traditional European model, telephone service in CEE countries was vested in Postal, Telephone, and Telegraph (administrations) (PITs), also responsible for postal and telegraph services and in some cases for broadcasting, and typically under the control of the ministry in charge of communications. (See table 6-2. )

As state-owned enterprises, telephone service operators, therefore, were both highly political and highly bureaucratic: telecommunications was used as a political tool for social and economic control, and telephone enterprises were bound by administrative public-service structures that prevented them



SOURCE ORGANIZATION FOR ECONOMIC COOPERATION AND DEVELOPMENT, INTERNATIONAL TELECOMMUNICATION UNION, FEDERAL COMMUNICATIONS COMMISSION, 1992.

from readily changing goals, strategies, or internal structures. Furthermore, telecommunications operators were closely supervised by finance ministries as they set prices and collected and distributed revenues. Telecommunications supported the postal service and contributed to the general treasury. Until recently, for example, the Czechoslovakian PTT turned over 87 percent of telecommunications profits to the general treasury.<sup>33</sup> The awakening of users to the value of communications has strained old telecommunications operating models in many countries. A major challenge to these countries will be to become much more responsive to users’ needs.

## Regional relationships

### Western approaches

Other aspects of telecommunications modernization are cooperation among countries in the region and assistance from international agencies. As noted above, for years the

Figure 6-6.  
Telephone Operator  
Productivity, 1991

<sup>a</sup> Local exchange carriers  
(regional Bell operating  
companies and the major  
Independents).

<sup>b</sup> Czech and Slovak  
Federal Republic

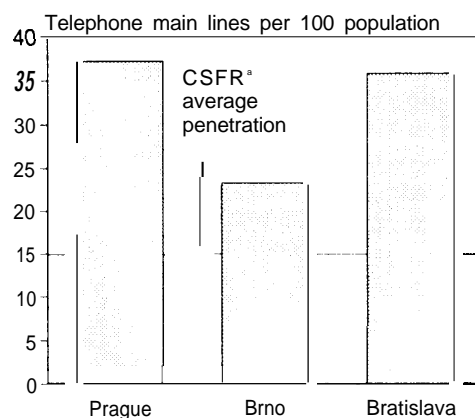
31 Timothy Nulty, *Considerations in Telecom Investment in Eastern Europe* (Washington, DC: World Bank, 1990).

32 Discussion with Gordon Cook, former OTA analyst and specialist on Soviet telecommunications networks.

33 Tim Kelly, op. cit., footnote 28.

**Figure 6-7.**  
**Urban and Rural**  
**Service**

a Czech and Slovak  
Federal Republic



SOURCE: INTERNATIONAL TELECOMMUNICATION UNION,  
AT&T'S THE WORLD'S TELEPHONES, 1991.

Soviet Union presided over a set of unilateral telecommunications arrangements with its satellites and limited their interaction with one another. In the mid- 1980s, the United Nations Development Program (UNDP) and the International Telecommunication Union (ITU) proposed to reduce this isolation by sponsoring a regional telecommunications development program, which became known as Euroteldev.<sup>34</sup> Its formal goal was to establish projects relating to new equipment, services, and network structures. Informally, however, it was intended to provide money and motivation for CEE telecommunications

officials to begin to emulate the telecommunications world outside of the Soviet sphere.<sup>35</sup> Euroteldev has so far only produced plans, though those who have participated agree that its work should continue. Now that free political and commercial relationships between the East and West are possible, Euroteldev mission may however have less justification.

In addition, the ITU itself is attempting to play a larger role in helping developing countries modernize their telecommunications networks. Under the auspices of the newly created Bureau of Telecommunication Development<sup>36</sup> (BDT, after the French acronym), the ITU organized its second Regional Development Conference on telecommunications development in Central and Eastern Europe, which was held in Prague in November 1991.<sup>37</sup>

The conference focused on four main areas: regulatory policy and structure of the telecommunications sector (i.e. privatization, creation of a separate regulatory body); telecommunications standards and network harmonization with Western Europe; needs for and sources of financing; and human resource training and development.

34 For a thorough description of Euroteldev, see John F. Healy and Ronald A. Davidson, *UNDP/ITU Evaluation Mission, European Telecommunications Development—Phase II*, Project RER/87/025, Evaluation Report (Geneva: mimeo, June 1991).

35 OTA interview with John F. Healy, project director, UNDP/ITU Evaluation Mission, Washington, DC, Sept. 17, 1991.

36 A High Level Committee on the structure of the ITU recommended that it be reorganized into three equal branches: telecommunications development, standards, and radio communications. The BDT is the successor to the Center for Telecommunications Development, which was an ancillary part of the ITU.

37 The first conference was held the previous year, in Africa, and the third was held in early 1992 in Latin America. Participating in the conference were officials from the telecommunications authorities of all the countries in Europe. Attending as observers, but with full participation in committees, were such countries as the United States, Canada, Mexico, and Japan, and such international organizations as Inmarsat, Intelsat, the European Commission, the Organization for Economic Cooperation and Development, the World Bank, and the European Bank for Reconstruction and Development.

The conferees agreed to create a working group of members from the subregion to jointly tackle issues left unresolved at the close of the conference, such as financing, network development, and human resources development. This group, the Central and Eastern European Telecommunications Co-operative Mechanism (CEETEC), builds on the experience of Euroteldev. Recent reports on these cooperative ITU activities suggest they are likely to move slowly.<sup>78</sup> Most cooperative activities will occur on a company-to-company basis, as financing questions can be resolved.

### CoCom

Central to the telecommunications modernization plans of CEE countries is investment in advanced transmission and switching equipment. This equipment is not available from the former Comecon trading partners, but only from the Western countries. However, during the Cold War the West, through the Coordinating Committee on Multilateral Export Control (CoCom), established strict controls on the export of goods with military applications to Soviet-bloc countries and China.<sup>39</sup>

CoCom restrictions on importing high-tech communications equipment to the United States have, until very recently, hindered CEE governments in modernizing their networks. Telecommunications exports were a bitterly fought export-control issue within the Bush Administration and in other West-

	Average telecom investment, 1989-91 (US \$ mil.)	Investment per capita (US\$)
Bulgaria	160	28
Czechoslovakia	113	10
Hungary	195	30
Poland	42	4
Central and Eastern Europe	630	9
Western Europe	43,810	128

SOURCE INTERNATIONAL TELECOMMUNICATION UNION (ITU),  
ITU INDICATORS, 1991, TABLE 30, P. 30.

ern industrialized countries because of competing goals, military security, and free trade. Principally at issue are fiber optics and 32-bit digital computer processors, both of which may have military and civilian uses. Fiber optics permit vastly greater transmission capacity than coaxial copper cable or microwave but are much more difficult to tap, which makes monitoring of military and military industrial activities more difficult.<sup>40</sup> CoCom has set a limit of 140 Mbps data transmission rate on systems installed between Russian cities, and 565 Mbps on systems terminating in some Russian cities, including Moscow, St. Petersburg, and Vladivostok. Intracity communications in restricted countries would have to continue using microwave or copper cables.<sup>41</sup> As late as 1992, this ban prevented U.S. West from constructing a trans-Siberian fiber optic network. According to officials in Hungary, however, CoCom should not now be a problem because the level of technology

Table 6-1.  
*Telephone Investment  
Levels, Comparing  
Hungary,  
Czechoslovakia,  
Poland, with  
United States and  
Western Europe*

38 Interview with senior State Department official, Washington, DC, Apr. 29, 1992.

39 CoCom consists of 18 countries: the NATO countries except Iceland, plus Japan and Australia.

40 Advanced digital processors are controversial because they could allow significant advances in computing speed for weapon design, targeting, encryption and other military operations.

41 In developing civilian telecommunications, reliance on microwave systems can be of great benefit, as the systems are capable of carrying substantial traffic, are well understood, are relatively inexpensive, and are easy to set up and reconfigure.

	Telephone revenues, 1991, (US\$ mil.)	Revenues per capita (US\$)
Bulgaria	112	12
Czechoslovakia	543	35
Hungary	533	52
Poland	520	14
Central and Eastern Europe	3,188	24
Western Europe	128,426	355

SOURCE: INTERNATIONAL TELECOMMUNICATION UNION (ITU),  
ITU INDICATORS, 1991, TABLE 28, P. 28.

Table 6-2.  
Telephone Revenues  
for Hungary,  
Czechoslovakia,  
Poland and/or  
CEE Average

presently available to them is acceptable and appropriate.<sup>42</sup>

In the United States, the Department of Defense and the various agencies of the intelligence community argue that maintaining CoCom restrictions is essential for national security. Firms such as AT&T, on the other hand, claim restrictions are no longer needed.<sup>43</sup> It appears that proponents of trade liberalization are prevailing. As it becomes apparent that Eastern European countries no longer pose a direct military threat to NATO

(North Atlantic Treaty Association), the CoCom countries recently have taken a number of steps to modify their restrictions, in order to nurture new potentially lucrative trading partnerships.<sup>44</sup> Further, fiber Optic technology is becoming available to these countries. Because German firms are permitted to honor contracts made in the former East Germany, the former East German firm, Carl Zeiss, can export advanced fiber optic technology to the CEE countries and Russia. This loophole is putting pressure on CoCom members to modify the restriction.

Change is quickest for the three most politically progressive and stable countries, Poland, Czechoslovakia, and Hungary, which have begun to institute export control procedures that satisfy CoCom.<sup>45</sup> Hungary, which has had an export control regime in operation since October 1990, is the farthest along; CoCom agreed in May 1992 to remove Hungary from the list of proscribed destinations.<sup>46</sup> The prospect of relaxing or eliminating

42 Also, it was—and still is—a matter of national pride in Hungary, for example, to successfully circumvent the restrictions. OTA Interview with Erno Pungor, Hungarian minister for technological development, Washington, DC, Oct. 31, 1991.

43 Hearings in the 102d Congress before the House Foreign Affairs Committee's Subcommittee on International Economic Policy and Trade ventilated these arguments. OTA has not attempted to evaluate these claims independently, as this would require use of classified material. Subcommittee staff believe, however, that nothing they have seen in the record suggests that continued restrictions on high capacity fiber exports are warranted. OTA interview with John Scheibel, staff director, House Foreign Affairs Committee's Subcommittee on International Economic Policy and Trade.

44 "U. S., Allies Preparing to Ease Curbs on Exports to Baltics, Other Countries," *International Trade Reporter*, vol. 9, Mar. 11, 1992, p. 434.

45 Some barriers remain for export to the Commonwealth of Independent States, particularly for systems to be used for internal traffic. "U. S., Allies Agree to Liberalize Telecommunications Exports to Ex-USSR," *International Trade Reporter*, vol. 9, Mar. 11, 1992, pp. 430-31.

46 This move is contingent on establishing new guidelines covering nuclear technologies and munitions and requiring that restrictions be placed on the export of Hungarian technologies and goods as well. Previously, Hungary's export rules only restricted the reexport of high-tech goods to the former Soviet Union and only targeted dual-use technologies. "Hungary to Comply Soon With CoCom Requirement for Freeing High-Tech Trade," *International Trade Reporter*, vol. 9, No. 10, Mar. 4, 1992, p. 390. The status of Poland and the Czech and Slovak Federal Republic (CSFR) was given more favorable consideration, but consideration of removal from the proscribed list is to be delayed.

ing bans on importation of high-tech goods is an important leverage to impel these countries to progress toward Western political and economic practices.

Efforts are underway in CEE countries to correct major structural flaws that have contributed to the disintegration of both the economic structure in general and the telecommunications sector specifically. Modernizing telecommunications" addresses only a single, but critical, element of the broader need for reform. In recognition of its fundamental importance to their economies, both as an industry in its own right and as a multiplier for other economic activities, the CEE countries are planning major organizational and legal changes. This liberalization is aimed at both improving the communications networks and creating an environment conducive to foreign financial and technical assistance for modernization.

The World Bank and the Organization for Economic Cooperation and Development (OECD) estimate that the total cost of modernizing will be around \$50 to 60 billion over the next decade, and considerably more if the countries of the former Soviet Union are included.<sup>47</sup> The ITU estimates that the cost for Central and Eastern Europe, including the former Soviet Union, would be \$94 billion just to bring service levels to Ireland's

current standard.<sup>48</sup> Expectations of improving penetration levels to Western levels by the end of the century are ambitious, perhaps unrealistic; and these figures only represent additional lines, not replacements of dilapidated network and terminal equipment. (See table 6-3.)

How telecommunications modernization will be paid for is a difficult issue for all CEE countries, as their economies are relatively unproductive in world markets, their foreign exchange reserves are low, and their prospects for short-term improvements are bleak. It is likely that some combination of self-generated revenues, capital raised in foreign markets and eventually from domestic markets as these develop, and foreign aid or loans, will be necessary.

The prospects for raising revenue internally from telecommunications service and allocating it for network modernization are not encouraging. Profits from telecommunications services generally are returned to the general treasury, rather than being reinvested in telecommunications. Tariff structures in each country provide subsidies to local calls and handset rental charges, depriving the operator of revenues that could be used for network modernization.

CEE financial markets are as yet weak, and in some cases there is no other domestic

*Modernizing  
telecommunications  
systems will cost  
about \$50 to \$60  
billion. Who will  
pay is still  
unclear.*

<sup>47</sup> The World Bank's projection of costs is generated by a rough estimate of the average cost of installing a single telephone line (about \$2,000) multiplied by the number of additional lines that the government/operator forecasts putting in. Timothy Nulty, *Considerations in Telecom Investment in Eastern Europe* (Washington, DC: World Bank, 1990). According to OECD's calculations, the \$50 billion in investment necessary to increasing the telephone penetration rate to levels on par with the West do not include the investment required to improve services. Moreover, this amount does not account for the former Soviet Union. See "Finding Their Voice," *The Economist*, Feb. 8, 1992; "Central and Eastern Europe: The Problems of Reconstruction," *Telecommunications*, October 1991, p. 158; and Tim Kelly, "Telecommunications in the Rebirth of Eastern Europe," *The OECD Observer*, No. 167, December 1990, pp. 19-20.

<sup>48</sup> "New Study Says Eastern Europe, ex-USSR Need to Spend \$94 Billion to Upgrade Phones," *International Trade Reporter*, vol. 9, No. 41, Oct. 14, 1992, pp. 1758-59. Ireland has one of the lowest telephone penetration rates in Western Europe, at 29 telephones per 100 inhabitants.

Box 6-A. U.S. WEST TRANS-SIBERIAN LINK PROJECT

CoCom restrictions have prevented a U.S. West-led consortium from constructing a fiber optic link across Siberia. One proposal is to lay a 565 mbit/second fiber line totaling 11,528 miles from Nakhodka, in the east, to Moscow, where the line would split, one branch going to St. Petersburg and Denmark, the other to Sevastopol and Italy; the deal is reportedly worth \$500 million. Currently, most of the European-Far East traffic goes across the Pacific, the United States, and the Atlantic. Sending calls across Asia would reduce the transmission length by 30 percent. With traffic between Europe and the Far East projected to rise by 15 percent annually, U.S. West estimates that the fiber line's full capacity would probably be completely used as soon as deployed. Furthermore, internal demand for both long-distance domestic and international telecommunications services is likely to be enormous.

With CoCom restrictions still in place, calls will likely be routed *around* Russia, with most of the network not within the country at all. High capacity links from certain Russian cities would send Russian calls to switching centers outside the country. The calls would then be routed to other switching centers, and then sent back into Russia via high-capacity 565 megabits/second fiber terminating links. Traffic continuing in Russia would be sent via high-speed microwave equipment (156 mbit/second), which does not violate CoCom restrictions. From the Russian point of view this is less desirable than a fiber link, but would improve substantially capacity and reliability while observing existing CoCom restrictions.

SOURCE: OFFICE OF TECHNOLOGY ASSESSMENT, 1993.

source of investment capital than the government, either through the Treasury or the government-owned banks. International capital markets could be used, but the rules on investing are not yet clearly delineated. Horvath of the Hungarian Telecommunications Company (HTC) told OTA that he attempts to get financing as much as possible from Hungarian banks, but while HTC is a preferred customer, the banks' resources are insufficient to meet HTC's needs. Horvath noted that there would be limits to foreign investment because Hungary is a small country, and it is already getting half of all foreign capital coming into Eastern Europe (of that, more than half comes from the United States). Aid money from the West and from multilateral lending agencies is not available in the amounts required. Estimates provided by telecommunications authorities

to the ITU show that Hungary, Czechoslovakia, and Poland each expect 45 to 70 percent of modernization investment to come from internal sources, 15 to 35 percent from bank loans, and 10 to 15 percent from private sources, including foreign investment.<sup>9</sup>

Thus, reform of telecommunications financing will involve several elements. First, it will be necessary to reform the PTTs in order to make them more responsive to private business needs. All the Central and Eastern Europe PTTs are slated to break into several parts, splitting the telecommunications, postal and in some cases, broadcasting operations off from the ministry, which will retain oversight and regulatory authority. At the same time, tariffs are likely to be changed to bring prices more in line with costs, and to reduce telephone rental and local calling subsidies. Second, financial and regulatory

policies will have to be made predictable so that companies will conclude that it is not unduly risky to invest in these countries. Finally, privatization, as is projected in Hungary and discussed in other countries, will open telecommunications firms to private capital. Capital will be sought on domestic markets, as these develop, and on international markets, through the sale of shares in the national firm when the state sells off its assets. The need for external investment may entail a significant amount of foreign ownership, either through share purchases of privatized firms, or through participation in joint ventures or other cooperative arrangement.

A number of CEE countries, especially Poland, Hungary, and Czechoslovakia, anticipate becoming members of the European Community, where they will be required to follow EC directives, including those regarding telecommunications. Several are already pursuing or intend to follow these requirements for liberalization in order to improve their prospects for membership. Additional pressure for liberalization or reform is coming from potential investors and financing sources, who, against the backdrop of general uncertainty about political stability, are reluctant to invest without the proper legal

	Main lines to be added from 1992-2000 (millions)	Estimated investments 1992-2000 (US\$ bil.)
Bulgaria	.69	1.0
Czechoslovakia	2.6	3.8
Hungary	2.2	3.3
Poland	8.8	13.1
Central and Eastern Europe	24.2	36.3

SOURCE: INTERNATIONAL TELECOMMUNICATION UNION, *EUROPEAN TELECOMMUNICATION INDICATORS* (GENEVA: INTERNATIONAL TELECOMMUNICATION UNION, OCTOBER 1992), TABLE 33, P.33.

framework, especially regarding private property and repatriation of profit.<sup>50</sup>

Major sources of financing, such as the European Bank for Reconstruction and Development (EBRD) and the World Bank, are making liberalization a precondition to assistance. For example, the EBRD, which was created in 1990 specifically for the purpose of providing financial assistance in the transition to market economies,<sup>51</sup> lent \$377 million (268 million ecus) for telecommunications projects in Central and Eastern Europe in 1991, while the World Bank lent \$270 million for telecommunications improvement to Poland and Hungary. The European Investment Bank provided an additional \$211 million (150 million ecus).<sup>52</sup>

### ***Strategies for liberalization***

Because Western Europe is looked at as a model for the newly emerging democracies,

Table 6-3.  
*Telecommunications  
Modernization,  
Main Lines and  
Investments,  
1992-2000*

<sup>50</sup> Analysts are divided on this point. There may be some capital inflows to the region regardless of the legal uncertainty: as one analyst pointed out to OTA, U.S. firms hope to hide behind their joint ventures with CEE enterprises, who, they say, will understand the laws and deal with the regulators. OTA interview with Robert Bruce, attorney, Debevoise and Plimpton, Washington, DC, Sept. 23, 1991. A senior State Department official noted, however, that U.S. firms are still on the sidelines, by and large. OTA interviews, Washington, DC, Apr. 29, 1992.

<sup>51</sup> On the initiative of the EC, 42 countries in May 1990 created the European Bank for Reconstruction and Development, a multilateral bank modeled after the World Bank "as a major vehicle for channeling Western resources into the reconstruction of the economies of Eastern Europe." Holliday and Harrison, "The Economics of Reform in Eastern Europe," *CRS Review*, vol. 11, Nos. 3-4, March-April 1990, p. 26.

<sup>52</sup> "Finding Their Voice," *The Economist*, op. cit., footnote 1.

Us.  
Telecommunications  
Services in  
European  
Markets

Table 6-4.  
Foreign  
Participation  
in Cellular  
Licenses of  
Eastern Europe  
and the  
Former  
Soviet Union

Country/city	Partners	ownership	Award date	Comments
Czechoslovakia	Eurotel		1990	Eurotel will invest \$60 million over next 10 years.
	US West (US)	24.5%		
	Bell Atlantic (US)	24.5		
	Czech & Slovak PTTs	51.0		
Hungary	WesTel		1989	To date, US West has invested \$13 million.
	U.S. West (US)	49.0		
	Hungarian Telephone Company	51.0		
Poland	Polska Telefonía Komorkowa		1991	\$50 million investment over 3-4 years.
	Ameritech (US)	24.5		Reportedly, Ameritech and
	France Telecom	24.5		France Telecom paid \$70-80
	Polish PTT	51.0		million for the license,
Romania	Nationwide Cellular (U. S.)	51.0	1991	
	Romanian PTT	49.0		
Russia				
Moscow	Moscow Cellular Communications		1991	Initial investment: \$7 million.
	US West (US)	22.0		
	Millicom International Cellular Sweden (US.)	20.0		
	Ministry of Posts and Telecommunications	50.0		
	Fyodorov Eye Microsurgery Science and Technology Complex of Moscow	8.0		
	Euronet		1992	Reportedly awarded a test license by the Russian military to operate an 800 MHz cellular system.
	Plexys International (US)			
	Information Transfer Technical System Center (Russian Ministry of Foreign Affairs)			
	Vimpel Corp. (Russian military electronics contractor)			
Russia				
St. Petersburg	Delta Telecom		1991	Priority connection to international gateway switch. \$7 million investment.
	U.S. West (US)	40.0		
	St. Petersburg City Telephone Network Production Association	55.0		
	St. Petersburg Station Technical Radio Control			
Ukraine	Ukrainian Mobile Company		1992	The consortium is licensed to provide paging, analog cellular, GSM cellular and PCN services. Reportedly, PTT Netherlands has relinquished its stake to DBP Telekom.
	DBP Telekom (Germany)	16.3		
	PTT Telecom (Netherlands)	16.3		
	Telecom Denmark	16.3		
	Ukrainian Government	51.0		



# Telecommunications in Central and Eastern Europe

Country/city	Partners	Ownership	Award date	Comments
Estonia	Eesti Mobiil Telefon (EMT)		<b>1990</b>	Baltic Systems are interoperable with the Scandinavian, Moscow, and St. Petersburg cellular networks.
	Telecom Finland	245		
	Swedish Telecom	24.5		
	Estonian PTT	51.0		
Latvia	Latvian Mobile Telephone Company		<b>1991</b>	
	Swedish Telecom	24.5		
	Telecom Finland	24.5		
	VEF (Latvia)	23.0		
	Latvian State Radio & Television Centre	23.0		
	Latvian Telecommunication Centre	<b>50</b>		
Lithuania	Comliet		<b>1991</b>	Comliet will also establish international satellite link.
	Millicom International Cellular (Sweden/U. S.)	<b>490</b>		
	Vilnius Telephone Network (Lithuania)	<b>410</b>		
	UAB Antena (Lithuania)	<b>10.0</b>		
Byelorussia	CommStruct international (U S )	<b>50.0</b>	<b>1991</b>	
	Byelorussian PTT	<b>50.0</b>		
Russia			Expected early 1993	Government has announced bidding for GSM licenses in 12 Russian cities, including Moscow and St. Petersburg.
Uzbekistan	Uzbanrobta		1992	ICG is providing hard currency and operating expertise.
	ICG	<b>45.0</b>		
	Uzbek Communications Ministry	<b>550</b>		
Hungary			1993	2 nationwide, 15-year GSM licenses. One is reserved for Hungarian Telecommunications Company/foreign company joint venture; the other will be 100 percent private. Likely foreign bidders: WesTel for the HTC joint venture; BT, France Telecom, DBP Telekom consortium for the private license. Upfront \$30 million fee and \$1 million annual radio frequency usage fee,

SOURCE "INDUSTRY TRADE AND TECHNOLOGY REVIEW," OFFICE OF INDUSTRIES, U.S. INTERNATIONAL TRADE COMMISSION, FEBRUARY 1993, PP 2-3

*The European Community is the model for liberalizing Central and Eastern European telecommunications. However, much uncertainty has accompanied liberalization efforts, and many are still incomplete.*

the EC telecommunications directives and the precedents established by EC member countries are a guide to the liberalization measures. For example, Czechoslovakia's new telecommunications law, passed in March 1992, is consistent with European Community directives.<sup>53</sup> In Romania, the EC Green Paper is also a guide for telecommunications liberalization.<sup>54</sup> As the senior legal analyst in the Hungarian Ministry of Communications put it recently,<sup>55</sup>

*The intention of the Hungarian telecommunications policy is to follow the directives of the EEC [European Economic Community]. The reason for this is not only because it is a political aim, but also because EEC directives are based on large scale compromises between the various players, especially the pro- and anti competitive ones.*

Nevertheless, U.S. regulators feel they are successfully communicating the elements of the U.S. regulatory structures, process, and philosophy to CEE telecommunications au-

thorities. The recasting of the public telephone operators (PTO) relationship with the government is the critical first step to modernization. Modernization will be impossible so long as revenues from telephone service are turned over to the government rather than reinvested in the network. Operators have been unable to raise domestic rates because of pressure from finance ministries, which respond to political pressure from users who would suffer if rates were raised.

Privatization is an opportunity for the government to raise much-needed funds and get large infusions of hard currency. The recent privatization of Mexico's telephone company is setting a precedent for CEE countries. Hungary, Poland, and Czechoslovakia have all separated the operator from the government in a carefully planned evolution eventually leading to privatization.<sup>56</sup>

This separation necessitates the creation of a regulatory agency. Under the old PTT system, no functional distinction was made between operations and regulation because

<sup>53</sup> "Czechoslovakia Passes Law," *CommunicationsWeek International*, Apr. 6, 1992, p. 34. The law stipulates the creation of a regulatory body separate from the operator and anticipates competition in communications services, except for basic voice telephony, for which the service providers in the two republics (SPT Praha and SPT Bratislava) retain exclusive rights.

<sup>54</sup> Dan Stenfanescu, "Telecommunications in Romania," paper in *Policy Dialogue on Telecommunication Development: A Seminar With Central and Eastern European Countries*, held in The Hague, Apr. 22-24, 1991, doc. no. DSTI/ICCP/TISP(91)7 (Paris: Organization of Economic Cooperation and Development, June 4, 1991), p. 2.

<sup>55</sup> Krisztina Heller, "Regulatory Trends in Hungarian Telecommunications," European Regional Development Conference (EU-RDS), Prague, Nov. 19-23, 1991, doc. no. EU-RDC-91/13-E (Geneva: International Telecommunication Union, 1991), p. 1.

<sup>56</sup> Privatization may be accomplished in a variety of ways, and is a complex process for which governments in Central and Eastern Europe may be unprepared. Telecommunications attorney Robert Bruce told OTA that in Hungary, the debate on privatization also dealt with decentralization of telecommunications. Tim Nulty, senior economist at the World Bank, notes that developing countries should proceed slowly on privatization, and that a variety of "bottom-up" forms of privatization can occur without selling off the whole telephone network. See Timothy E. Nulty, "Telecommunications in Developing Countries: The World Bank's Perspective and Role," European Regional Development Conference (EU-RDS), Prague, Nov. 19-23, 1991, doc. no. EU-RDC-91/14-E (Geneva: International Telecommunication Union, 1991), p. 4.

the government was presumed to protect the general public good and ensure that social goals were met. Also, the distrust of monopoly that necessitated regulation in the United States theoretically did not exist in centrally planned economies.

A great deal of uncertainty has accompanied the drafting of new laws, despite the model of the 1987 EC Green Paper. The new Hungarian telecommunications law has been through many drafts, changing almost daily. The Polish bidding process for a foreign-owned new cellular network was nearly completed when the government decided to reverse legislation allowing 100-percent foreign ownership, instead requiring majority Polish ownership.<sup>57</sup> political opposition to privatization in Poland and Czechoslovakia may constrain the types of services that may be privately provided.

Since several of the countries of the region aspire to economic parity with western Europe in short order, they are acutely concerned with the provision of advanced telecommunications services, such as high-speed data and mobile communications. This was one of four main issues highlighted at the ITU's Regional Telecommunications Development Conference. Business customers, especially those accustomed to Western standards of service options and quality, will need modern services and thus may shoulder much of the costs of modernization.<sup>58</sup>

The establishment of cellular networks has high priority, to supplement (or perhaps supplant) the existing public wireline net-

works for office communications as well as for mobile communication. Cellular networks are targeted first at incoming Western businesses and investors, to whom the dilapidated telephone system seems an unmanageable impediment. New foreign entrants will also focus on more lucrative and easier-to-serve centralized business clients.

Another immediate goal is the establishment of overlay digital backbones to provide international access for business and government, and to link major business centers. These networks are typically either microwave systems, or fiber optic networks, as are planned in Hungary and Poland. Given the difficulty of raising tariffs for the whole public-switched network, there are some important benefits from the fact that overlay and cellular networks can be tariffed at higher rates. Business customers are willing to pay these higher rates for better service until telecommunications operators reform national tariffing schemes for both land-based and cellular systems.<sup>59</sup>

### Problems with *liberalization*

Some skepticism is justified with regard to telecommunications liberalization in this region. First, there is a question whether the rhetoric for telecommunications reform matches the genuine intentions of these governments and the ability or inclination of the system operators. While significant strides have been made quickly in upgrading the facilities and the services in primary cities, modernizing the entire networks is the real challenge,

<sup>57</sup> Julian Bright, "Poland," *Telecommunications*, October 1991, p. 164.

<sup>58</sup> OTA interview with Pal Horvath, op. cit., footnote 13.

<sup>59</sup> Jürgen Müller, "Closing the Capacity and Technology Gap in Eastern European Telecommunications," European Regional Development Conference (EU-RDS), Prague, Nov. 19-23, 1991, doc. no. EU-RDC-91/8-E (Geneva: International Telecommunication Union, 1991), p. 12.

If modernization is not integrally tied to changing corporate and social demand, this goal may not be met. Residential customers are accustomed to paying artificially low prices for telephone service and may not be able to afford the higher rates for modernization.<sup>60</sup> Though initially successful, Bulgaria was unable to sustain a telecommunications modernization effort in the 1980s. Poland, too, has twice announced ambitious intentions to improve services, both of which fell far short of expectations. However, the financial participation from multilateral agencies and foreign investment from the West marks a major difference with previous reforms. There is strong interest among these countries, the European Community, and the United States in developing telecommunications networks rapidly.

Second, the pressure to liberalize telecommunications and open markets to foreign involvement creates an acute dilemma regarding procurement and manufacture of telecommunications equipment. The pressure to assure the economical construction of modern communications infrastructure, which in the short term will require purchasing Western products (or joint ventures with Western firms), conflicts with the need to solidify their own high-tech industrial bases.<sup>61</sup> Telecommunications equipment firms, 80 percent of whose production was until re-

cently absorbed by the Soviet market, have been devastated by the breakdown of intra-bloc Comecon trade and the shift to hard currency transactions.<sup>62</sup> Efforts to keep these companies afloat will likely require some form of industrial policy as countries decide to what extent they will subsidize, privatize, or direct firms to engage in joint ventures with Western companies.

Third, resorting to advanced business services, overlay networks, and differential tariffs, while expedient for attracting foreign business, risks widening the gap between communication haves and have-nots. While there are some plans to improve rural and public pay phone services, investment and attention will go to those who can pay, leaving the public network to be modernized later.

Finally, the initial enthusiasm for wholesale reforms is beginning to subside. Plans to privatize telephone companies have been delayed as the view reemerges that telephone service still should be entrusted to government. Problems with wholesale sectoral reform in society in general are dampening plans for privatization and liberalization of the telecommunications sector. France has emphasized that its model of development may be more appropriate for CEE countries than that of the United States or the United Kingdom, since France managed to bring a

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<sup>60</sup> To align the prices of service with the costs—not only of the delivery of the service but for modernization—will be difficult, as rate increases are likely to raise social tensions. This has happened elsewhere. Business Week reported that an intended rate increase for telephone service in Venezuela had to be forestalled shortly after the military had mounted a coup attempt for fear of setting off more civil unrest. Mary Farquharson et al., "The Deals Are Good, But The Dial Tone Isn't," Business Week, No. 3260, Apr. 6, 1992, pp. 86-87.

<sup>61</sup> Jürgen Müller, op. cit., footnote 21.

<sup>62</sup> Marc Dandelot, "Telecommunications in Eastern Europe: Is the Problem Really a Lack of Money?" *Telecoms Magazine*, October 1991, pp. 41-46, cited in JPSR Report, Telecommunications, JPSR-TTP-92-001-L, Jan. 6, 1992, p. 14.

deteriorating telephone system up to a level of excellence without privatization, by means of thorough internal reorganization.

The process of transforming the centrally planned economy into a market economy in Poland, in particular, has been beset with problems.<sup>63</sup> Reports of fraud and scandal and troubles with effective tax collection are rife.<sup>64</sup> The telecommunications reforms have not so far delivered improvements in telephone service. The parliament has turned to a more cautionary plan of bolstering state industries and slowing down privatization.<sup>65</sup> Whether Poland's troubles will prove to be a foreshadowing of problems for the rest of Central and Eastern Europe or a guide to more successful transitions is yet to be seen.

### Involvement of the United States

Western Europe, and particularly Germany, is deeply interested in economic and social reform in Central and Eastern Europe. In addition to being neighbors, Western and Eastern Europe share a similar heritage, and economic cooperation seems imminent. Nevertheless, the United States also has significant stakes in the future of the region. Beyond matters of national security, the opening of the CEE countries represents sizable new markets, and their success in the transformation to democratic governance represents an affirmation of important economic and political ideals.

CEE countries also have an interest in participating in global markets, and are clearly looking to the United States for financial and technical assistance. For them, the United States presence represents a potential counterbalance to the influence of other Western European countries, principally but not exclusively Germany. The Overseas Private Investment Corporation and the Export-Import Bank encourage trade development by providing insurance and financing to U.S. exporters. U.S. participation in the World Bank, the International Monetary Fund, and the European Bank for Reconstruction and Development represents a major locus of financial assistance to Central and Eastern Europe.

Congress has acted to assist the economic and social transformation of the region; in 1989, Congress passed the Support for Eastern European Democracies Act (SEED), which allotted \$1.5 billion in grants for 1990-92 to encourage political reforms, economic development, and social reforms (especially recognition of human rights) in Central and Eastern Europe. The SEED Act was an expanded version of President Bush proposal for \$350 million in assistance to Poland and Hungary).

Congress has also been particularly interested in energy, environment, and telecommunications as the keys to these general market and political reforms in the CEE countries. The House Committee on Foreign

<sup>63</sup> For a very detailed account of Poland's experience with reform, see Lawrence Weschler, "Deficit," *The New Yorker*, May 11, 1992, pp. 41-77. See also Stephen Engelberg, "Poland's New Climate Yields Bumper Crop of Corruption," *New York Times*, Nov. 12, 1991, p. A1.

<sup>64</sup> Whereas the state used to receive much revenue from the state industries, private companies are finding ways of avoiding paying taxes. "Poland's Wrong Turn," and "Poland Loses Heart," *The Economist*, Feb. 22, 1992. Also, OTA interview with Martin Morell, Network Dynamics Associates, Washington, DC, Oct. 1, 1992.

<sup>65</sup> "Poland's Wrong Turn," and "Poland Loses Heart," *The Economist*, op. cit., footnote 64.

**U.S. involvement  
in reforming  
telecommunications  
in the region  
emphasizes advice,  
technical assistance,  
and private sector  
involvement, rather  
than direct aid.**

Affairs, for example, sent a delegation to Poland, Hungary, and Czechoslovakia in November 1990, which issued a report on "Eastern European Telecommunications, Broadcasting, and Environment." Congressional requests to the Office of Technology Assessment include policy information for Central and Eastern Europe on issues such as telecommunications and energy efficiency. OTA people have been involved in informal and formal discussions on developing science policy and technology assessment institutions in these countries.

The Office of International Communications in the Federal Communications Commission (FCC), along with the National Telecommunications and Information Administration, is working closely with several of the CEE countries to help establish regulatory mechanisms and spectrum management technique and expertise. Though significant constitutional differences make it difficult to exactly duplicate the U.S. FCC (an independent regulatory agency) elsewhere,<sup>66</sup> several countries have created telecommunications regulatory bodies with U.S. assistance, and others are in the process. The U.S. Telecommunications Training Institute, a private organization, works under contract to the U.S. Agency for International Development, and other private sector organizations work to bring management skills to Central and Eastern European telecommunications operators.

Despite these initiatives, some observers feel that the U.S. effort is meager relative to the magnitude of the problems CEE countries face. U.S. budget difficulties and economic conditions make it difficult politically to allocate much money to the region, and U.S. policy emphasizes advice and technical assistance rather than direct aid. This leaves a relatively greater role for U.S. private sector involvement in economic development in the region.

American companies have been active in telecommunications rehabilitation in the region, and in increasing numbers are capitalizing on the opportunity to tap into new markets, for both equipment manufacturers and service providers. Regional Bell operating companies (RBOCs) are involved in numbers of projects to build and/or operate cellular networks and data networks in key cities of the region (see chapter 4). U.S. West and Bell Atlantic joined the Czechoslovakian Ministry of Posts and Telecommunications to form Eurotel, a joint venture to build and run a cellular mobile system and construct a public packet-switched (data) network. Eurotel, of which each RBOC owns 24.5 percent, began operation in September 1991 with an initial capacity of 4,000 subscribers; the cellular system is expected to reach 50,000 within 5 years.<sup>67</sup> U.S. West is also involved in a venture to operate a cellular network with the Hungarian Telecommunications Company, Westel Radio-

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<sup>66</sup> The FCC's "independence" is the carefully constructed result of the tension between administrative and executive (with the oversight of the judicial) branches of governance, which is unique to the United States. The Central and Eastern European countries are re-establishing parliamentary democracies, which characterize Western Europe.

<sup>67</sup> The regional Bell holding companies (RBOCs) expect to invest \$60 million over 10 years in the system. "Telecommunications Profiles for Select Eastern European Countries," NTIA, Department of Commerce, Oct. 5, 1990. See also Charles Mason, "Czechs Turn Up Cellular Service," *Telephony*, Sept. 16, 1991, p. 3.

telefon, Kft. Westel went online in Budapest in October 1990 and attracted 4,000 subscribers in the first 6 months, surpassing the projected use by 2,500 subscribers in the first year.<sup>68</sup>

AT&T is pursuing contracts in Central and Eastern Europe and the republics of the former Soviet Union. It is installing a new international exchange in Warsaw for the Polish telephone company, which will double Poland's current capacity for international calls.<sup>69</sup> Additionally, AT&T is involved in a deal worth \$26 million, signed in March 1992, to build a 1,400-km fiber-optic telephone network.

These deals require creative financing: AT&T is taking significant risks in getting paid, since all of the republics in the region have little if any hard currency reserves, and their currencies are not yet convertible. The company may end up with in-kind payments in oil or copper.<sup>70</sup> Businesses require clear rules and a stable political environment before they will undertake large-scale investment. Such stability is not yet present in many countries in the region. Wall Street is reluctant to commit much capital to ventures in the region, and has pressed for increased political risk insurance from the U.S. Government.

While the transformations underway in these countries create great opportunity, there are also pitfalls. Though much is known about capitalism, relatively little is known about the *transition* to capitalism, and Poland's experience with transition gives reason for caution. The challenges of transforming these societies are great, and the future of these countries' democratic and capitalist movements remains uncertain:

*It is necessary to turn over the ownership of state-owned enterprises to private entities on some equitable bases. Obsolete, energy-wasteful, environmentally destructive plants must be replaced. Currencies have to become convertible. Transportation and communication infrastructures must be put into place. Entrepreneurial and managerial skills must be learned rapidly. Products capable of attracting hard currency must be manufactured. . . . In each of the countries, hundreds of laws need to be passed in order to transform the economy.<sup>71</sup>*

Retrenchment to authoritarian regimes is not unlikely if the reform measures do not shortly prove materially beneficial.<sup>72</sup> Reflecting the growing doubt about the benefits of democracy and a free market in Poland,

<sup>68</sup> U.S. West will contribute \$20 million over the first 2 years to build the system, while HTC, through World Bank loans, will invest another \$20 million. OTA Interview with Andras Sugar, general manager, and John Handley, operations director, WESTEL (a U.S./Hungarian cellular telephone joint venture), and Jim Russell, manager of direct distribution, U.S. West NewVector Group, Budapest, Oct. 8, 1991. See also Steven Titch, "The Liberalization Express Roars Through Hungary," *Telephony*, June 3, 1991, p. 40.

<sup>69</sup> This deal is worth \$12 million. "AT&T Signs Polish Accord," *Telcom Highlights International*, vol. 14, No. 16, Apr. 15, 1992, p. 1.

<sup>70</sup> John Keller, "AT&T Signs Big Contract to Supply Former Soviet Republic With Phone Gear," *Wall Street Journal*, Mar. 3, 1992, p. A2.

<sup>71</sup> Madeleine Albright, "The Role of the United States in Central Europe," Proceedings of the Academy of Political Science, Nils H. Wessell (ed.), New York, 1991, vol. 38, No. 1, p. 80.

<sup>72</sup> Ibid.

*It is in the political interest of the United States to promote telecommunications, in order to solidify democratic gains in Central and Eastern Europe.*

President Lech Walesa has claimed that foreign companies are reaping the benefits of Poland's privatization without contributing anything to the culture, economics, or infrastructure of the country.<sup>73</sup> There is growing frustration in Poland over a perceived lack of involvement and investment by the United States in Poland's modernization. The division of Czechoslovakia into the Czech Republic and Slovakia signals not only abiding nationalist sentiments, but also differences over industrial development strategies, including reliance on market mechanisms in economic development.

The relation between economic activity and telecommunications is well known, though not always well understood. It is no coincidence that the conditions of telecommunications networks in these countries deteriorated (or failed to develop) alongside ruinous economic policy; and it will be no coincidence if these networks improve hand-in-hand with economic reforms. However, to suggest that telecommunications directly leads to economic development is to overstate its place in a far more intricate social/political/economic/cultural dynamic; indeed, the quality of the communications network may be as much a consequence as a cause of a strong economy. Modern telecommunications may be necessary but is not sufficient for development of a modern industrial and service economy.

## Conclusion

The countries of Central and Eastern Europe are in need of quick repair to their telecommunications networks; they are also in need of quick repair to other critical

infrastructure and institutions. In the telecommunications sector, the United States is pressing for an aggressive "liberalization" agenda. This entails primarily the divestiture of the telephone operator from the government and its eventual privatization, open entry and free-market competition for services and equipment. This approach, paced by strong industry input, is based on self-interest as well as a commitment to improve welfare in the CEE. The opportunity for U.S. equipment and service suppliers to receive contracts is greatly improved by a competitive free-market environment, where Western products are generally superior to indigenously-produced equipment, at least for the time being. A competitive free-market environment depends on the existence of an independent oversight body and the replacement of political criteria by economic and operational factors. There may also be benefits associated with roughly similar regulatory approaches among nations as well.

Finally, the United States is motivated in part by a sense of democratic purpose. It is in the U.S. Government's political interest to promote broader and deeper access and use of telecommunications in order to solidify democratic gains in the region, which would hedge against a return to antidemocratic regimes in the future.

The fuller implications of liberalization and competition, or even privatization, seem to be often overlooked for short-term considerations. What is good for U.S. firms is presumed to be good for these countries. While a number of agreements have already been struck by U.S. firms to provide investment, products, or services, CEE policy makers

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73 Blaine Hard in, "Poles Sour on Capitalism: Walesa Accuses West of Preying on Country," Washington Post, Feb. 5, 1992, p. A1.



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are somewhat ambivalent about the appropriateness of U.S. recommendations for their needs and circumstances. They have not rushed to embrace the U.S. regulatory model, and have considered more statist models, such as European telecommunications, particularly France, as possibly more appropriate to their needs. They also undoubtedly have hesitated because of their own inexperience, uncertainty, and lack of consensus about what direction they should take. The challenge facing the United States generally

is how to encourage CEE countries to adopt particular types of reforms that most further U.S. interest in an area where U.S. leverage is generally weak. The EC member countries are also attempting to persuade CEE countries to reform in particular ways, not all of which are exactly as U.S. interests would wish. Thus North America and Western Europe are struggling over Central and Eastern Europe, trying to influence structures and regulations and ultimately gain access to new markets.