Telecommunications

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Telecommunications

World Bank Experience and Strategy

Bjorn Wellenius and others

The World Bank
Washington, D.C.
FOREWORD

Telecommunications is a rapidly changing and growing sector worldwide, now generally recognized as an essential element of economic development strategy. The number of Bank staff and managers involved at some level in telecommunications policy and operations is also increasing, many are newcomers to this sector, and they are found throughout the Bank. This paper is expected to be useful to them as a common framework for exploring, outlining, and reviewing current and potential Bank operations involving telecommunications. It responds to a request by the directors of the Bank’s four technical departments to prepare a document that outlines the Bank’s approach to telecommunications.

The process of preparing this paper was regarded at least as important as the product. A special effort was made to ensure wide participation throughout the World Bank Group, as a means to build up awareness and consensus. Successive drafts were reviewed by a panel of Bank staff and managers, circulated to all staff involved in telecommunications operations, distributed to all division chiefs and procurement advisors responsible for telecommunications operations, discussed in four workshops on selected issues, and finally distributed to all country directors. The current version takes into account responses from some 70 staff and managers in the Bank, IFC, and MIGA.

The paper reflects a considerable degree of consensus. Where unresolved issues remain, however, the paper seeks to clarify the options and relative merits rather than come down on one side of the debate. Having gone through an extensive consultative process, we feel that it is timely to release the current version of this paper for dissemination within and outside the Bank and as an input to decisions by individual managers. As a working document, however, this paper does not necessarily reflect Bank policy or the views of senior management and the Board of Directors.

Comments and questions are most welcome and may be addressed to Bjorn Wellenius, Principal Telecommunications Specialist, who was responsible for preparing this paper.

Daniel Ritchie
Director
Asia Technical Department

December 1992
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1. This note outlines the Bank's approach to telecommunications policy and operations. It brings together the main features of this rapidly changing and growing sector, identifies key policy issues and options, and draws some implications for Bank operations and work practices. The note was prepared with participation of numerous staff and managers of the Bank, IFC, and MIGA, and reflects a considerable degree of consensus. Where important differences of approach subsist, the note seeks to clarify the alternatives and their relative merits rather than come down on one side of the debate. This note does not discuss strategy in specific regions, nor the Bank's role in telecommunications manufacturing. Parts I and II link telecommunications to economic development strategy and examine the sector's constraints and changing organization. Part III reviews the Bank's past involvement. Part IV discusses the Bank's changing role and strategy in the medium term, focusing on key issues and policy tools. Part V examines some implications for the Bank's operations.

I. TELECOMMUNICATIONS AND THE INFORMATION ECONOMY

2. Information is regarded today as a fundamental factor of production, alongside capital and labor. The information sector accounted for one-third to one-half of GDP and of employment in OECD countries in the 1980s, and is expected to reach 60% for the European Community in the year 2000. Information also accounts for a substantial proportion of GDP in the newly industrialized economies and the modern sectors of less developed countries. In the 1980s, this increasing information intensity of economic activity, coupled to the globalization of capital flows, trade, manufacturing, and other activities, resulted in strong demand for better, more varied, and less costly communication and information services. Demand growth has been intertwined with rapid changes in telecommunications technology fueled by advances in microelectronics, software, and optics. These changes have greatly reduced the cost of information transmission and processing, changed the cost structures of telecommunications and many other industries, made possible new ways of meeting a wider range of communication needs at lower cost, reduced user dependence on established operating entities, and increasingly integrated information and telecommunications technologies and services. These interrelated processes show no signs of abating.

3. In this context, telecommunications is now widely considered to be a strategic investment to maintain and develop competitive advantage at all levels — national, regional, firm. Telecommunications constitutes the core of, and provides the infrastructure for, the information economy as a whole. Telecommunications facilitates market entry, improves customer service, reduces costs and increases productivity. It is an integral part of financial services, commodities markets, media, transportation, and tourism, and provides vital links among manufacturers, wholesalers, and retailers. Moreover, industrial and commercial competitive advantage is now not only influenced by availability of telecommunications facilities, but also by choice of network alternatives and control to reconfigure and manage networks in line with changes in corporate objectives. Countries and firms that lack access to modern telecommunications systems cannot effectively participate in the global economy. This applies to the least developed countries of Africa and Asia as much as to middle-income countries, such as those in Latin America, East Asia, and Central and Eastern Europe, which aspire to become developed countries in the next decade or so.
II. SECTOR ORGANIZATION AND PERFORMANCE

4. Traditionally, telecommunications had been regarded as a relatively straightforward public utility. Economies of scale, political and military sensitivities, and large externalities made telecommunications a typical public service believed to be a natural monopoly. In most developed countries, telecommunications services were provided by government departments or state enterprises, which generally succeeded in building and profitably operating country-wide infrastructures, meeting the demand for basic telephone service, and starting to introduce more advanced services. In the 1980s, however, driven by rapid changes in technology and demand, a wave of liberalization and privatization led to major changes in telecommunications sector structure in most OECD countries. These reforms have accelerated investment, increased responsiveness to user needs, greatly broadened user choices, increased productivity, and reduced prices.4

5. In developing countries, telecommunications services were initially run by foreign private companies and colonial government agencies. Most operations were nationalized in the 1960s and taken over by the public sector. These state telecommunications monopolies, however, generally fell far short of meeting needs, as evidenced by persistent large unmet demand for telephone connections, call traffic congestion, poor service quality and reliability, limited territorial coverage, demonstrated willingness of users to pay far higher prices to obtain service, the virtual absence of modern business services, and user pressures to bypass the system by building their own facilities.

6. Research by the Bank and others in the 1960s and 1970s documented the development role of telecommunications. It was shown that telecommunications services are used in connection with a wide range of economic production and distribution activities, delivery of social services, and government administration. They also contribute to the quality of life and to social, political, and security objectives. Where available, telecommunications benefit a broad cross-section of the urban and rural population attending to income, education, and occupation. These features result in high social and (with appropriate tariffs) private returns from telecommunications investment, and in a considerable resource mobilization capacity. Bank-financed telecommunications projects in the 1980s typically had economic and financial rates of return of about 30% and 20% respectively. About 50% of the funds needed for these investments were internally generated by the operating enterprises. Additionally, these enterprises often made substantial net contributions to public funds, mainly through taxes, dividends, and subsidies to postal services.5

Constraints on Telecommunications Development

7. Three constraints account for telecommunications shortfalls in developing countries. First, despite high social and private returns, the level of investment has been consistently much lower than needed to meet demand. This reflects capital and foreign currency shortages in the public sector generally, many competing demands, government appropriation of telecommunications operating surpluses to the detriment of reinvestment within the sector, and limited or no access of the operating enterprises to other sources of capital. Although overall telecommunications investment in the developing world grew in the last 20 years at 10%-12% per annum in real terms to about US$11 billion in the late 1980s, this averaged only 0.4% - 0.6% of GNP.6 Countries that succeeded in rapidly modernizing their economies invested in telecommunications a much larger share of GNP (e.g., Singapore 1.1%, Malaysia 2.3%). Second, although telecommunications enterprises are often among the best-run public sector
entities, their internal organization often follows that of government departments rather than businesses. Weaknesses are commonly found in organization structure, financial management, accounting and information systems, procurement practices, and human resources development. This results in high cost of expansion and operation, poor maintenance, slow response to changing demands, and limited project preparation and implementation capacity. Third, capital and enterprise performance shortfalls in most cases are ultimately traceable to government policies that make it difficult for the telecommunications entities to operate as commercial enterprises. Policy inadequacies include insufficient financial and administrative autonomy; lack of incentives to contain costs and improve customer service; tariffs that neither meet financial requirements nor reflect cost structures; non-competitive remunerations and career opportunities; employment, welfare, and social obligations; and political interference.

8. In the 1970s, attempts to overcome these constraints focused on obtaining for telecommunications a larger share of the countries' limited public funds and external development credit and aid. Combined with borrowing by enterprises in creditworthy countries, and in some cases by mandatory subscriber financing, this resulted in sustained rapid growth and modernization of telecommunications services in several countries (e.g., 15% annual growth in Brazil and Costa Rica). Overall, however, the sector's capital requirements exceeded what governments could allocate to it. Deteriorating national economies and tighter international credit in the early 1980s further constrained investment and led to escalating supply shortages and lower service quality, even in countries that earlier had done fairly well.

9. The future capital requirements of telecommunications development are formidable indeed. For developing countries in Asia/Pacific, Latin America, and Africa to catch up with the demand for basic telephone service by the year 2000, as a group they would have to invest in the 1990s about US$25-30 billion per annum. In real terms, this is about four times the average achieved in the 1980s. Additionally, at least some US$ 10 billion per annum will be required to modernize facilities in Central and Eastern Europe and in the former Soviet Union.

10. Throughout the 1970s some developing countries also made considerable progress towards more efficient use of the scarce available resources, through improvements in enterprise organization and management. However, in the context of inadequate government policies, internal changes alone proved to have limited potential.

**Beginnings of Sector Reform**

11. From the mid-1980s, a growing number of developing country governments have recognized the need to overhaul the prevailing telecommunications sector arrangements in order to mobilize more capital for investment, improve the performance of the operating enterprises, and respond to the rapidly growing pressures for better, more, and more varied telecommunications services. This movement is driven by the same forces in evidence in the developed countries, namely technology and demand, amplified by six factors. First, the limits of traditional approaches to telecommunications development, largely based on state monopoly of supply, had been reached and were increasingly recognized. In particular, it became clear that the governments would be unable to provide the huge amounts of capital required to catch up with demand. Second, developing countries began to adopt economic strategies including measures to liberalize trade, promote competition, deregulate financial and capital markets, reduce restrictions on foreign investment, and restructure public enterprises. This gave renewed urgency to develop telecommunications as required for these broader economic reforms to be effectively implemented; it also provided an environment that encouraged sector innovation. In several countries,
telecommunications was chosen to lead government efforts in state enterprise restructuring. Third, popularly elected governments found that public dissatisfaction with service and, in many countries, extensive corruption of telephone company personnel, resulted in widespread support for major reform initiatives. Fourth, events in developed countries raised international awareness of a wide range of sector policy issues and options, and demonstrated the viability and increasing political desirability of alternatives to state monopoly. Telecommunications operating companies in developed countries, repositioning themselves in their own changing domestic and regional markets, aggressively started to pursue new business opportunities in developing countries. Lastly, foreign banks sought to shift their exposure in highly-indebted developing countries from non-performing loans to new investment opportunities, among which telecommunications were particularly promising.

12. Although the policy issues and options are fairly universal, the sectoral solutions chosen, and especially the strategies to implement them, are highly country-specific. Yet, all telecommunications reforms so far mainly involve some degree of change along each of four directions: commercializing and separating operations from government; containing monopolies and developing competition; increasing private sector participation; and shifting government responsibility from ownership and management to policy and regulation.

13. The pace and scope of reforms has varied considerably among regions. The reform movement got to an early start in Latin America; privatization of state telecommunications enterprises has been completed in Chile (1987), Argentina (1990), Mexico (1990), and Venezuela (1991),9 is at various stages of preparation in Bolivia, Colombia, Ecuador, Panama, Peru, and Uruguay, and is being considered in Brazil, Nicaragua, and other countries. Following the collapse of the communist regimes in Central and Eastern Europe and in the former Soviet Union, rapid progress is being made in outlining broad sector reform strategies to deal with the huge service and technology gaps relative to the rest of Europe; all governments are developing the details of implementation, and several of them (e.g., Czechoslovakia, Hungary, Poland, Ukraine) are already building state-of-the-art business networks through joint ventures and other new investment and management modalities. Reform has been slower and of more limited scope in Asia: corporatization in Malaysia (1987) and subsequent partial privatization (1990), corporatization and liberalization of non-basic services in Indonesia (1990), decentralization of operations in India (1985, partial) and China (1988, extensive), government initiatives to accelerate development outside the main urban centers in the Philippines (from the late 1980s), and reorganization from telecommunications departments to state enterprises in Sri Lanka and Fiji (1990); the pace may be picking up, however, with Pakistan preparing for privatization, Thailand embarking in major BTO ventures, and the Indian government exploring options to restructure the state operating entity and possibly open up parts of the market to new service providers.

14. Africa. It could be argued that, in relative terms, the least developed countries have the most to gain from sector reforms, yet in sub-Saharan Africa the efforts to overcome telecommunications shortages have so far been largely confined to trying to improve the performance of telecommunications state entities. While some countries have explored possible new modalities, including joint ventures with PTTs and introducing some competition, most governments still hesitate to consider broader reforms and privatization. This mainly reflects their concern for limited available resources, especially skills to prepare and implement such programs. It is compounded by small markets, extreme paucity of existing facilities, disproportionate size of social needs, and sometimes unfriendly economic policies, which appear less attractive to foreign operators and investors than opportunities in other regions.10 Nevertheless, telecommunications privatization is now underway in Cote d'Ivoire and Guinea, some other governments
have expressed interest in this experience, there are success stories of small private ventures (e.g., cellular) led by local entrepreneurs in a few countries, and regional organizations are starting to examine the broader prospects for telecommunications restructuring.

III. THE BANK'S PAST ROLE

15. The Bank has supported telecommunications development since the mid-1960s. The scope of operations has tended to reflect Bankwide priorities and practices. Initially, the Bank focused on financing investment to modernize and expand physical plant. This included some strengthening of the operating enterprises (mainly in the areas of accounting and finance, planning and project preparation, and procurement) and improving relations with government (especially regarding tariffs and finances). In the 1970s, broader efforts were made to strengthen the telecommunications enterprises' organization and management. In the mid-1980s the Bank further expanded the scope of its support for telecommunications, emphasizing sectoral reforms including, where appropriate, the privatization of state telecommunications enterprises.

16. The Bank (including IDA) has lent from the 1960s until today about US$5 billion for some 120 stand-alone telecommunications investment projects worth over US$20 billion in 54 developing countries (of which US$1.8 billion was lent in FYs 87-91 for 23 projects worth US$9.2 billion). This makes it the largest multilateral source of telecommunications financing. Bank loans and credits typically finance 15%-50% of total project cost, currently averaging about 20%. The balance comes mainly from internally generated funds (50%), supplier and export credits and aid (25%) and government and other sources (5%). The Bank's telecommunications loans and credits often finance a time slice (e.g., three to five years) of the whole sector's investment program. The Bank has increasingly given explicit recognition to telecommunications in economic reform programs. In recent years, about 20% of all non-sector Bank lending has included support for telecommunications, mostly as part of quick-disbursing public enterprise restructuring and policy adjustment loans. Through these operations, the Bank has assisted in designing sector policies and reforms, preparing new legislation and regulations, organizing and carrying out the privatization of state enterprises, and establishing telecommunications regulatory institutions. Also about 20% of all loans and credits for other sectors, especially transportation, agriculture and rural development, energy, and population, health and nutrition, contain telecommunications components. Additional information is given in Annex I. The International Finance Corporation (IFC) has made in recent years major investments in telecommunications for its own account, and raised significant amounts of non-recourse financing for privatized telecommunications companies (e.g., Chile, Argentina) as well as for new private businesses (especially cellular telephone companies in Latin America and Eastern Europe).

IV. FUTURE BANK ROLE AND STRATEGY

17. The rationale of the Bank's involvement in telecommunications is mainly that telecommunications:

- has become a strategic investment for economic development, is a critical factor for the success of many other Bank operations, and results in efficiency gains throughout the economy;
requires a comprehensive approach to sector policy linked to overall country economic strategy, which commercial and bilateral organizations are neither inclined nor equipped to handle;

- can lead cross-sectoral policy reforms, public sector restructuring, and regulatory development;
- can be an essential component of private sector development programs; and
- offers tangible results and low project risk for Bank lending.

18. Developing country governments are interested in the Bank mainly because it offers impartial and credible policy and institutional advice backed by substantial financing. Governments also value the Bank as a unique source of cross-country experience, and for its ability to mediate among government agencies, catalyze orderly sector development, and help government oversee major players. Bilateral and other multilateral agencies count on the Bank’s analytic, supervisory, and aid coordination capabilities. To prospective operators and investors, the Bank helps clarify and stabilize government policies, provides some protection against political and regulatory risks, and can leverage investment.

Main Thrust

19. The Bank can support the telecommunications sector most effectively by focusing on creating conditions that lead to increased investment, higher production efficiency, and greater service access, quality, responsiveness, and choice.

20. Of primary importance is ensuring that governments opportunely address the full range of telecommunications policy and regulatory issues. These refer to market structure, ownership of operating entities, conditions and rules of market entry and exit, service obligations, pricing and cost recovery, and institutional roles. A checklist is in Annex II.

21. Sector development will largely hinge on building up (i) diversity of supply and competition, (ii) participation of private capital and enterprise, and (iii) effective public regulation. These key components of sector reform are discussed below.

22. The Bank’s support, however, should not be conditional on the countries’ agreeing to follow a particular blueprint for sectoral reform. There is a wide range of solutions that can be effective. Rather, the Bank can help governments examine policy options, assess their merits in terms of sectoral objectives, identify the necessary conditions for successful implementation, and develop reform programs that are consistent with country economic and political situations and with world market outlooks. While mainly drawing on the growing body of reform experience in developing and developed countries, including lessons from its own experience, the Bank can help the governments explore and try out promising but not yet fully tested new elements of solution.

Developing Competition

23. In the context of broad economic liberalization, an essential element of telecommunications sector reform is developing competition. A single monopoly operating enterprise, whether state-owned
or private, is increasingly unable to meet equally well the large, varied, and rapidly changing demands of all types of users. Competition, or a credible threat of competition, is likely to spur established operating enterprises to focus attention on customers, improve service, accelerate network expansion, reduce costs, and lower prices. Competition also widens user choices and accelerates the introduction of new services and facilities. Elements of competition can be effectively introduced in the early stages of sector reform and extended by stages to most or all market segments. Modalities can range from competitive award of monopoly or duopoly to regulated entry to unrestricted competition. Technological changes are making competition possible in a widening range of market segments. Competition in the provision and maintenance of customer premises equipment and value-added services is beneficial in virtually all countries. The introduction of elements of competition in the long distance networks makes sense as increasing traffic volumes reduce the importance of economies of scale. In several countries, developed and developing alike, licensing private company networks and regulating their interconnection to the public network and provision of service to third parties has been used to build up competition in this market segment. At present, large economies of scale make competition in the provision of wired local services viable only in exceptional situations (e.g., highly developed urban business districts); however, new radio technologies, although still more costly than wired telephones, offer competing alternatives to business and high-income residences when conventional telephone lines are very scarce or perform poorly, and when time to provide service is highly valued.

24. In addition to measures to promote competition, there are various other ways to diversify and expand the provision of services and networks. Diversifying supply can attract new sources of capital and management to the telecommunications sector, develop rivalry among service providers regarding performance and price, and generate cost benchmarks to guide pricing of monopoly suppliers. The following are some options: (1) Dividing monopolies by regions; (2) Joint ventures for the provision of specific new services or facilities (e.g., VSAT, packet switched data, cellular); (3) Leasing, build-operate-transfer, and related arrangements with other operating companies, equipment manufacturers, and investors for developing parts of the public network; (4) Licensing selected specialized networks to meet the needs of major communication-intensive sectors of the economy (e.g., banking, tourism, mining); (5) Franchising independent public telephone companies in unattended areas (e.g., new industrial estates, residential developments); (6) Licensing extensions of the public telephone network (e.g., rural subscriber radio); and (7) Articulating rules for commercial relationships between dedicated and public telecommunications networks.

Increasing Private Sector Participation

25. Increased private sector participation can attract new sources of capital, management, and technology to the telecommunications sector, and also contribute to the development of the private sector overall. A number of developing countries are considering the option of privatizing the state telecommunications enterprises by transferring a controlling interest to the private sector, and several have already done so. Privatization may take a number of different forms. The transfer of ownership control can be through the sale of shares of an existing enterprise to the public, or to strategic investors through a bidding process, or may involve setting up state/private joint ventures, possibly with experienced foreign operators. Alternatively, one or more new companies can be set up taking over parts of the assets of the existing enterprise, and sold separately. There is mounting evidence that privatization in this sector as well as others, when correctly conceived and implemented, is accompanied by accelerated investment and growth, increased efficiency, and gains by most or all stakeholders (consumers, labor,
government, investors).\textsuperscript{15} Telecommunications privatizations are also generating large government revenues\textsuperscript{16} and helping reduce sovereign debt.\textsuperscript{17}

26. Besides new entry and privatization of state enterprises, there are many other avenues for private participation in telecommunications. Some options involve an increased role of the private sector in the operation of state enterprises, such as: (1) Existing state enterprises may divest or outsource construction, maintenance, transportation, routine design, billing and collection, directory services, operator assistance, and other functions traditionally undertaken internally; (2) Experienced private operating companies can be retained under management contracts to run the state enterprises; and (3) State enterprises can be reorganized as joint-stock companies, and some shares sold to institutional investors and the public while the state retains a controlling interest. Other options involve alternative forms of private sector financing, such as: (4) Bonds and other commercial debt instruments can be floated in domestic and sometimes foreign markets; (5) Private financial entities can be encouraged to invest in profitable new telecommunications ventures; and (6) Subscriber financing schemes can raise a large proportion of the local funds needed for expansion in situations of severe supply shortage.\textsuperscript{18}

27. \textbf{Issues of Privatization.} Privatization is a complex process of introducing private capital and know-how in telecommunications operations, and there is more than one way to correctly time and sequence this process. Various facets can be distinguished: (1) Separating operations from government and non-telecommunications activities (e.g., posts, manufacturing); (2) Restructuring telecommunications operations as an independent state enterprise charged with being financially self-sufficient and placing its financial relationship with government at arms length; (3) Internally reorganizing the enterprise in ways that are suited for running it as a business; (4) Reorganizing the telecommunications enterprise under private company law; (5) Devising a privatization strategy including decisions on controlling interest, employee stock ownership, trenching of stock sales, and residual state ownership; and (6) Carrying out the sale. A number of these facets may be dealt with over a relatively short time (e.g., Argentina, Mexico, Venezuela) or they may evolve in stages over longer periods (e.g., Chile, Malaysia). There are also various ways of sequencing these changes. For example, internal reorganization of the enterprise may be undertaken before privatization to enhance the company's value (e.g., Mexico) or left to the new owners (e.g., Argentina, Venezuela). Management contracts could be used to run the enterprise along private business lines, followed later by privatization of assets.

28. Successful privatization of a state telecommunications enterprise depends on a number of factors falling into place. Privatization must be inserted in the political process. At an early stage, the government must clarify its position regarding tradeoffs among conflicting interests arising from privatization, such as among existing operators, workers, prospective buyers, potential competitors, investment bankers, the treasury, equipment suppliers, large users, and the public at large.\textsuperscript{19} Of particular importance is addressing from the start the concerns of organized labor.

29. Privatization also requires creating a market structure and a regulatory environment that provide the new owners incentives and obligations to invest and perform, and institutional arrangements that free the operators from unwarranted controls yet safeguard users and reconcile commercial interests with broader development objectives. The regulatory framework for privatizing a monopoly must separate out potentially competitive activities, establish the tariff and interconnection regimes, clarify service goals, develop cost containment targets and incentives, and create or strengthen a regulatory capability to oversee implementation.\textsuperscript{20} In particular, privatization brings to the fore central issues of
pricing policy and regulation. Of particular importance is sorting out to what extent, if at all, is it necessary to continue charging prices well above costs for some services (e.g., international) in order to finance expansion of the basic network. A closely related issue is that of the scope and duration of monopoly privileges. Initial practice (i.e., Latin America) has been to give the dominant operator exclusive rights to provide basic telephone services and networks during up to 10 years, largely on grounds that this was needed to enable investors to undertake the large initial investments required to modernize and expand facilities. Current trends, however, are more pro-competitive, including narrower scope of protection (e.g., more liberal licensing of private networks and interconnection to the public network) and shorter duration (e.g., up to five years).21

30. International market considerations are also increasingly important. A large number of sales of telecommunications enterprises are planned in both developed and developing countries. However, only a limited number of experienced operating companies are interested in these opportunities.22 Timing and preparation will influence the extent to which privatization offerings by developing countries succeed. Commercialization of operations, organizational and financial restructuring of enterprises, renegotiation of labor contracts, and improvement of available enterprise information, are examples of actions that can make a particular offering more attractive. Some of the most visible and promising privatizations, however, have been carried out very quickly (in little over one year), which limits opportunity for preparatory work to the bare essentials.

31. Proper design and implementation of the complex process of privatization and related sector reforms requires strong and visible high-level political commitment, clear allocation of authority and resources to manage the process, and expert assistance (including foreign) on policy, regulatory, legal, and financial matters. Although sectoral solutions are highly country-specific and individual models cannot be readily transplanted, the experience of other countries (including developed countries) in dealing with related issues and options has proven very relevant.

32. Initial results from privatizing state telecommunications enterprises are generally very encouraging. Governments have successfully sold to consortia led by experienced foreign operating companies capable of providing expert managers, specialized management tools, and continued access to the latest technologies.23 Good financial performance, reflecting both major tariff adjustments and lower costs, is allowing privatized companies to initially finance accelerated investments largely from internally generated funds. Also, international markets have been increasingly willing to provide large amounts of capital for privatized companies in countries with sound macroeconomic and regulatory frameworks (e.g., Chile, Mexico, Argentina).

33. Some concerns have been raised, however, about the longer term prospects. Privatization is now being considered in a number of countries perceived by investors as posing higher political risk or offering less attractive markets. In several of these countries, even after sector-specific steps are taken to improve the investment environment, raising post-privatization capital may be a problem. The companies may be unable to attract enough private foreign capital, find themselves cut off from traditional sources of development financing, and lack sufficiently developed domestic capital markets on which to fall back.24 The importance of foreign operators will increase as privatization reaches the less developed enterprises. Some analysts, however, worry that the incentives and obligations of the operators as set by the government at the time of privatization are not strong enough to secure their permanence for the rather long periods that are needed to turn around some of these companies.25 Although so far these problems have not materialized, they do raise issues that must be examined in designing the reforms.
Experience will show to what extent these and other concerns are justified, and how reform strategies might be modified to deal with them.

Developing Regulation

34. The single most troubling issue in recent reforms is slow progress in developing regulatory capabilities. All major reforms have been based on the expectation that effective public regulation of the privatized monopolies, especially with respect to prices, service obligations, interconnection, competitive behavior, and access to the public domain (including use of the radio spectrum), can be developed fairly quickly. Yet building up regulatory institutions where none exist, in countries with little or no regulatory tradition in any sector, is proving to be an arduous and slow task. Whereas some developing countries have carried out satisfactory privatization in little over one year, the telecommunications regulatory systems are only in their infancy. The initial operation of the largest privatized companies is taking place with little or no competition and in a regulatory vacuum in which critical regulatory responsibilities regarding licensing, pricing, technical and accounting standards, and performance monitoring, for example, are not properly discharged. In a market dominated by one operator, and lacking effective and proactive regulation, competitors are unlikely to emerge and become firmly established, and numerous forms of anti-competitive behavior may become entrenched.

35. The search for better regulatory solutions merits high priority in the design of sector reforms. The following partial steps can help: (1) Government action on regulation can be encouraged by creating political incentives through new constituencies, such as competitors, consumer groups, and commercial user groups, which will benefit economically from effective regulation, and giving these groups a forum to express their interests to the government and the regulatory body; (2) Restructuring the sector in ways that set up strong competitors in key market segments from the outset generates a demand by both the emerging competitors and the dominant operators for regulatory action, and shifts the focus of regulatory tasks to the more technical issues of interconnection and standards. However, there are limits to how much competition a particular market can sustain; (3) Major regulatory decisions can be built into sales contracts, concessions or licenses granted to the operators rather than left to the incipient regulatory process. Some self-enforcement can be expected to follow, but substantial implementation and oversight problems will typically remain, key parameters must be changed over time, and contracts are not particularly effective in some countries; (4) Where effective anti-trust legislation is in place, it may be relied upon to handle some of the matters that otherwise need sector-specific regulation; and (5) Other possibilities include arbitration of disputes, outsourcing of selected regulatory functions, and government establishing an advisory board representing users and other key interests and charged with setting an agenda for the regulator.

36. An important issue is that of location and independence of the regulatory function. Regulation involves technical matters as well as rent distribution. An effective regulator must mediate among competing interests seeking to appropriate rents and understand how this affects sector performance. In particular, the regulator issues and implements decisions that provide incentives for investment while also protecting customers from potential monopoly abuses. Given the high sunken costs that characterize the telecommunications sector, an effective regulator must also produce credible and stable regulatory policies that promote investment by reducing the risk of expropriation through regulation. There are a variety of institutional ways of organizing this regulatory capacity, ranging from dependence on anti-trust legislation and tribunals, to independent regulatory agencies, to locating telecommunications regulatory authority in a ministry. There is no unique formula for success.
Nevertheless, locating telecommunications regulatory authority in an agency that is at least partly insulated from party politics and changes of government, is more likely to be conducive to reducing investor risk and, thereby, to promoting investment to meet demand. Autonomy can be enhanced by full public exposure of all regulatory action, rules of engagement that restrict channels for the government to insert its political will in the regulatory agency's decisions, and financing that is independent from the annual budgetary cycle.30

37. The quality and progress of telecommunications regulation, however, will be tied to those of the country as a whole. Structures that are possible and necessary in the more advanced developing economies that have vigorous participation in competitive global markets, may be neither possible nor really necessary in lesser ones. Moreover, sector solutions are shaped by the country's political institutions and electoral arrangements, the interests of constituent groups, and the role of the judiciary and the government bureaucracy.31 Regulatory arrangements that seem optimal from a sectoral viewpoint may therefore not be feasible, and compromise solutions become necessary. In particular, the economic benefits of improved services following privatization of a state enterprise may well outweigh the rents captured by an imperfectly regulated monopoly. In some countries, having to pay high prices for communication, which accounts for only a small proportion of total cost of most businesses, may be less of a handicap to users than lack of good services. As an extreme example, entrusting services to an experienced foreign operator/investor may quickly remove communication bottlenecks in critical productive sectors, even if the absence of competition and effective regulation may keep prices high and compromise the pace of future innovation.

Addressing Emerging Issues

38. In contrast with the subjects discussed above, regarding which a substantial body of knowledge and fairly broad consensus on principles have already developed internationally (and to some extent within the Bank), other matters are only starting to receive systematic attention. Yet how some of these next-generation issues are dealt with is likely to have considerable impact on telecommunications policy and strategy.

39. Impact of Continued Technological Change. Continued rapid technological change is likely to bring to developing countries greater opportunities for lower cost and reliable expansion of networks, affording them possibilities of leapfrogging stages of network development. These changes, however, have greatly added to the complexity of designing, procuring and managing the new networks. For example, wireless technology for personal communication has emerged as a strong challenger to the fixed network; the cost of optical fiber systems continues to fall even as capacities increase; the new synchronous format for transmission systems permits flexible and inexpensive access to data streams; and faster computer technology is significantly increasing the call processing capacity of exchanges. These developments are changing the optimal network structure and reducing costs.32 Broadband ISDN (Integrated Services Digital Network) has also arrived, permitting integration of video, data, and voice — although standards have yet to be established. With the proliferation of new systems, it is uncertain whether there will be a multitude of competing technologies or a limited number of proven technologies will emerge through market dominance and de facto standardization. On the other hand, experience in developed as well as developing countries suggests that older networks, once in place, are likely to stay for quite some time, resulting in several generations of network solutions coexisting.33 The expansion of network alternatives has increased the importance of strategic planning and the need for revised network design and planning solutions. The challenge is to reduce overall cost while at the same time
ensuring the development of an integrated network that is robust, manageable, and consistent with broader development goals. In this context, prevailing approaches to network planning based on long-term master plans followed by piecemeal projects are likely to result in largely suboptimal solutions.

40. Technological innovation also raises the question whether reform designs based largely on today's dominant technologies, are capable of evolving and accommodating major systemic changes. Some innovations will further lower and eventually remove entry barriers. For example, radio technologies such as new analog and digital cellular telephony, personal communication systems, and satellite mobile services, all now reaching the market, will accelerate the demise of the wired local telephone network as a natural monopoly. Other developments, however, will have precisely the opposite effect. For example, new generations of optical fiber cables are resulting in ever cheaper bandwidth and negligible marginal cost of transmission, reviving natural monopoly arguments in parts of the system where now they no longer apply.

41. The potential impact of technology on regulatory strategy is especially intriguing. Continuing technological changes will offer new opportunities for further expanding the proportion of the telecommunications business that can be submitted to the disciplines of the market. Policy makers should take full advantage of these changes to lessen overall dependence on regulation and shift its focus. For the foreseeable future, however, regulation will not be dispensable. Established service providers are likely to retain considerable market power requiring regulation, and successive waves of liberalization and competition issues in some countries will actually increase the need for regulation.

42. Convergence of Telecommunications and Informatics. Telecommunications is becoming an integral part of a much broader family of information technologies and applications. Distinct economic activities are increasingly being structured as different end applications of a common business, namely the organization and management of telecommunications and information resources. Examples include banking, stock trading, broadcasting, publishing, library and information services, and national statistical services, as well as traditional telecommunications and computing. As the supply of telecommunications facilities grows and diversifies, the focus shifts from the conventional dichotomy of telecommunications networks and users to organizing and managing facilities available from many sources in ways that suit particular business needs. In this context, the boundaries among businesses become blurred, and, in particular, it is no longer clear what is a telecommunications company.

43. Policymakers (and the Bank) are only beginning to look into the implications of these trends for economic development. At least four areas require attention in relation to their effect on telecommunications policy and regulation. First, the structure of telecommunications supply is likely to influence the pace and directions of informatization of the economy. An initial step is to explore the extent to which it is helpful to organize the telecommunications sector in a manner that allows flexible development of facilities and services by a wide range of suppliers, including users by themselves and for others. This enhances the potential for innovation, but makes it more difficult to establish industry-wide standards needed to develop critical mass and ensure interconnectivity among user groups. Second, the choice of technologies to modernize and expand the main telecommunications network influences the future course of sector development and information technology applications. In particular, generalized networks, such as ISDN, would provide a viable platform for multiple uses which could be especially valuable in developing countries, eventually reducing costs compared to more diversified network structures. However, others believe that ISDN provides solutions that are cost-effective for certain categories of users but not for others, delays the development of facilities-based competition, and overall
costs too much. Third, there is the question of what should be the role of dominant telecommunications companies beyond traditional services. In particular, some analysts emphasize the economies that can result from these companies entering the value-added services market, for example by adding intelligence and processing capabilities to their existing networks and making these facilities accessible to users. Others, however, advocate the supply of new services by alternative providers, as part of building up an increasingly competitive environment. And fourth, the development of advanced telecommunications services is likely to have important externalities. The pace of informatization of the economy will be affected by policy decisions as to whether telecommunications companies should merely respond to demand or also play a proactive role, for example building up a critical mass of data terminals among small and medium business users to facilitate the development of information services.

V. SOME IMPLICATIONS FOR BANK OPERATIONS

44. The changing world telecommunications scene offers the Bank a range of new operational opportunities and challenges. Whereas stand-alone telecommunications loans and credits continue to account for only a few percent of the Bank's operations, the number of Bank interventions in this sector is growing, accompanied by increasingly flexible deployment of country economic and sector work, adjustment lending, investment lending, cofinancing, and possibly guarantees. The Bank's human resources and work practices are starting to evolve to better respond to those opportunities and challenges.

Country Economic and Sector Work

45. Given the broad relevance of telecommunications issues to economic development, these issues merit attention at all levels of the country policy dialogue. To that end, telecommunications would need to be included in the mainstream of country economic and sector work — country economic memoranda, country strategy papers, public sector investment reviews, public enterprise reform papers, private sector development strategies, and strategy papers on the financial and other specific sectors.

46. Relatively informal approaches to country sector work that emphasize quick response and interaction, are proving increasingly effective. Although preparation of stand-alone sector reports has continued to be a useful avenue to build up the telecommunications policy dialogue with governments in some cases (e.g., China, Indonesia), this may no longer be the most practical way in countries that are prepared to undertake structural change very quickly. Moreover, the process of change involves rapid learning and it is important for the countries to develop their own approaches, assisted by the Bank but without necessarily seeking or adopting its recommendations. One way is to prepare short issues and options papers as contributions to the countries' internal discussion process rather than reflecting the Bank's considered views, and distributed to selected government and industry officials; this has led to fruitful dialogue with definitive policy impact that could not have waited for fully processed Bank reports (e.g., Mexico). Also, some of the Bank's most significant contributions to the design of telecommunications reforms have been achieved by helping create, and then participating in, brief informal events such as exploratory policy seminars (e.g., Bolivia, Uruguay), progress review workshops (Argentina, Venezuela), drafting of regulations (Argentina), and discussions with leading candidates to high public office (Ecuador).
Lending Operations

47. Bank lending for telecommunications is increasingly justified in terms of creating or strengthening conditions for accelerated investment and performance improvement. Traditional telecommunications loans and credits, which finance specific investments with limited institutional and policy components included only as needed for the success of the investment, are giving way to a mix of policy and investment operations focused on sector reforms. Likewise, lending to the incumbent monopolist may not always be in the best interest of sector development; in particular, it may impede the emergence of new players. An assessment of the relative merits of alternative sector solutions is generally needed before lending is decided.

48. **Lending to State Enterprises.** Lending to state enterprises to help finance investment subject to specific progress on the policy front, is likely to become a powerful and widely used tool to assist the telecommunications sector along a reform path. Through lending to state enterprises, the Bank can help move the sector towards improved structures and institutions resulting in better performance, and facilitate eventual privatization. Privatization of many state enterprises may not be possible or desirable in the immediate future, yet in most countries the sector badly needs improvement. In some countries, the private sector may be interested in highly profitable market niches (e.g., international, cellular) but not in the far larger and longer commitments required to develop the core telecommunications business. In low-income countries with severe balance of payments problems, Bank financing of telecommunications investment will continue to be critically important to prevent the sector from falling further behind.

49. The Bank's experience with lending to state enterprises generally, however, suggests that the prospects for sustained improvement by acting on the state telecommunications entity alone are not particularly promising. State enterprise reform tends to be technically and politically difficult to implement, even well-designed programs often fall short in implementation, and performance improvements are difficult to sustain in the long run. This is consistent with experience in traditional telecommunications lending.

50. Bank lending to state telecommunications enterprises for investment should therefore be an integral part of a broader effort to achieve structural change in the sector. In particular, Bank lending to the state entities should be tied to specific progress along the following lines:

* Restructure state operations as commercial enterprises with increased financial and administrative autonomy from government. The focus should be on corporate governance and relationships with government, as distinct from the Bank's earlier concern mainly with internal changes within the operating entity.

* Ensure competent management, including support from more experienced operators when needed. Where appropriate, the Bank could make the appointment of qualified managers, or entering into a management contract with an external operator, a condition of lending.

* Restrict state telecommunications operating entities to core activities. Separate them from other businesses (e.g., posts, manufacturing). Limit expansion into new telecommunications services and networks.
• Build up the government's policy formulation and regulatory capabilities, independently from the operating entities.

• Develop a policy and regulatory framework to promote competitive markets and private participation. Establish an action plan and timetable to develop private participation and competition and condition Bank lending to progress in implementing this plan.

• Revise pricing policies and tariffs to better reflect costs and enterprise financial requirements. Establish simple mechanisms to adjust tariffs for inflation.

• Where appropriate, establish a plan and timetable to privatize remaining state operating functions.

51. It is not always possible to make uniform progress along all these directions, and the particular mix and sequence of reform-oriented policy packages to be supported by Bank lending is best decided case by case. In particular, opening up new markets to private entry, rather than attempting from the start to overhaul a large entrenched public bureaucracy, can help overcome some critical shortages, constitute a first step in diversifying supply and creating a basis for competition, and provide practical opportunity to start addressing key regulatory issues that would be less tractable at the sector-wide level. For example, developing an overlay business network can quickly meet the needs of major business users. At the same time, the issues of technical standards and pricing of interconnection to the main network must be sorted out. Cost-based prices can be charged for access to and use of the new network without having to bear the political cost of a major increase and rebalancing of tariffs for the existing network.

52. **Adjustment Lending.** Policy adjustment lending has proven to be a valuable Bank tool for supporting major transitions, such as the privatization of state telecommunications enterprises. Successful operations have provided advance funds for preparing reforms, quick-disbursing loans with policy conditions of tranche release, and financing for subsequent technical assistance. Several operations (e.g., Mexico road transport and telecommunications sector adjustment loan and a companion telecommunications technical assistance loan, both of 1990) provide useful models.

53. Experience so far, however, suggests some lessons applicable to future operations. First, for adjustment lending to provide timely support and guidance in telecommunications sector reforms, the Bank must move much faster than for conventional operations, regarding internal decisions and resource allocation, mobilizing external experts to supplement own staff and assist the government, and advancing substantial preparation funds. The Bank's prevailing procedures and pace have made it difficult for Bank managers and staff to keep on top of the reform process once it takes off, threatening to undermine the Bank's advantage. Second, if properly done, adjustment lending is as intensive in Bank resources as any other form of telecommunications lending. Merely adding telecommunications to a number of other sectors in an under-budgeted operation with little expert sectoral input would not contribute significantly towards the Bank's or its clients' objectives, and may erode confidence in the Bank. Third, adjustment operations span only a fraction of the time required to prepare and fully implement reforms. A succession of lending operations would enhance the Bank's effectiveness by providing longer support than an adjustment loan, affording more leverage than technical assistance loans, and maintaining a platform within the operating enterprises from which to support sector reform.
54. **Lending to Private Enterprises.** A major challenge that the Bank faces is revising its role in an increasingly private telecommunications environment. The development problem, and hence the Bank's interest, in telecommunications does not end with private ownership, just as it was not created with nationalization and state ownership in the 1960s. At the center of this debate is whether the Bank should lend to private telecommunications companies, and in particular to privatized state companies.  

55. There may be a strong rationale for state guarantee of Bank lending in the telecommunications sector. The governments will remain deeply involved in telecommunications. Even after a state operating company is privatized, the government retains a strong interest in the sector mainly through service obligations, franchises and licenses, tariffs, and use of the radio spectrum and public rights of way. Although one of the objectives of privatizing state telecommunications enterprises is to shift the responsibility for investment financing to the private sector, in some countries this may be a process that can only be achieved in successive steps during which Bank's assistance may be needed. Bank lending to private telecommunications enterprises with state guarantee, or to the government for on-lending, might be justified to (a) enable successful privatization of a state enterprise by reducing investor risk, (b) support critical longer-term components of sector reform beyond privatization, especially in the areas of regulation and competition, and (c) help overcome capital shortages and build up access to capital markets.

56. Lending to private enterprises, however, raises difficult questions. For example, what balance would the Bank strike between making large loans to the dominant operators, which may reduce the prospects for competition, and making small loans to new entrants, which is less cost-effective in terms of Bank resources? What financial intermediation arrangements would be appropriate to ensure that Bank financing is available to all competitors meeting specified criteria in a particular competitive market? What should be the Bank's lending or on-lending terms so as not to prejudice the beneficiaries against using alternative sources of funds, when these are available under reasonable conditions? Would Bank lending be appropriate if the enterprise owners include large multinationals or foreign state-owned companies? What about owners that, wishing to maintain control of an enterprise, restrict the issue of new stock and therefore contribute to the financing gap that a Bank loan would help overcome? How to deal with conflict among the government's interests as seller, licensor or franchiser, regulator, and guarantor?

**The Bank, IFC, and MIGA**

57. In the increasingly private telecommunications world, the World Bank Group needs to develop flexible and innovative ways of packaging the full range of finance, cofinance, guarantee, and technical assistance instruments that it has at its disposal. The developing countries would gain from much closer interworking among the Bank, IFC, and MIGA to help increase the flow of private capital, management, and technology to the telecommunications sector. The Bank has an unrivalled capability of sector analysis, is well positioned to help build up policy and regulatory frameworks and institutions, and is the main multilateral source of financing for public sector investments. The IFC has extensive experience in raising equity and debt financing, both for its own account and others, and following a substantial recent capital increase is expanding its presence in the telecommunications business. MIGA expects to provide guarantees to equity investors against non-commercial risks, including regulatory risk (e.g., breach of terms of concession, tariffs). Rather than considering these as competing alternatives, their strength in helping countries deal with increasingly complex telecommunications problems would be enhanced by applying them jointly as best suits each particular country situation.
Adjustments in Bank Resources and Work Practices

58. Changes in the Bank’s internal resources and practices would enhance its effectiveness in the changing world telecommunications environment as outlined in this note. Some areas for improvement are suggested below. Formulating action plans to follow up and implement these and other adjustments lies beyond the scope of this note.

59. **Operational Guidance.** A better analytic framework may be needed to provide guidance for future operations. In contrast with other sectors, such as power and transportation, telecommunications has never been fully integrated into the development debate. Although what various groups of Bank staff and managers need remains to be identified systematically, several areas where better guidance is desired have been pointed out: (1) The question of appropriate structure and level of access charges among international, domestic long-distance and local service carriers arises in many telecommunications operations, yet there is a shortage of directly applicable models. (2) Closer examination of the relative merits of price-cap (as distinct from rate-of-return) regulation in developing countries is needed, as well as guidance to staff on the use of this approach. (3) The design of policies to promote optimum sector structure in a developing country context involving, in particular, licensing and mandatory interconnection of new entrants, requires more analysis. (4) A better understanding is needed of issues of system planning and integration, choice of technology, and quality of service, and how these matters are affected by choices of sector structure and regulation. (5) Regulatory schemes suited to the less developed countries need to be explored and outlined. (6) Collections of case material (e.g., sector laws, regulations, licenses and franchises) and 'best practice' examples (e.g., terms of reference for consultants on sector restructuring, examples of tariff designs, bidding documents for private participation schemes) would also help. (7) While recognizing that sector solutions are highly country-specific, it has been suggested that a typology of country situations and appropriate ranges of approaches to sector development and Bank support would provide valuable initial guidance to non-specialist staff. (8) In particular, it would be useful to spell out minimum necessary conditions for Bank’s participation in the sector and what role that Bank should play even when not lending. (9) Better internal dissemination of available knowledge of the relationships between telecommunications and economic development, other sectors, and cross-sectoral economic policy objectives of the Bank, would also be useful to staff and managers that are new to this sector. (10) Follow-up discussions of the topics covered by this paper should be helpful to guide the approach to telecommunications on a regional or sub-regional basis.

60. **Project Concept and Management.** Flexibility of policy and project design, and a willingness and ability to help clients experiment and try out novel approaches, are likely to facilitate developing effective solutions in particular country environments. Given the complexity and fast pace of change in telecommunications, the Bank’s support cannot be configured as a set of standard packaged solutions. Of particular importance will be exploring practical ways to combine the World Bank Group’s resources to mobilize capital for private telecommunications enterprises. This entails a new Bank sensitivity to the beneficiaries’ need for rapid investment decisions, flexible procurement practices, confidentiality, and limited intervention in internal institutional matters. Likely implementation issues include arrangements for financial intermediation, the effectiveness of covenants when the beneficiary is several levels removed from government as borrower or guarantor, and conflicts of interest among different government functions in relation to the beneficiary.

61. The balance between Bank resources applied to preparation, appraisal, and supervision of the investment and the policy components of lending operations can be expected to change in favor of
the latter. Ways need therefore to be found to reduce the proportion of Bank effort applied to the more conventional 'hardware' aspects while still ensuring that any investments the Bank helps finance are sound. For example, the Bank could appraise the overall investment program and the participating entities' capability to prepare and carry it out, if necessary require the entities to retain expert assistance, but then largely rely on these arrangements without as detailed Bank involvement as in the past. However, excessive detachment from 'hardware' may be counterproductive. At the working level, the clients may perceive the value of the Bank’s presence largely in terms of assistance with investment issues. Helping the client deal with technical, procurement, and organizational issues of investment provides an avenue for dialogue and advice on policy matters as well. Procurement of hardware is likely to continue having a substantial impact on overall investment efficiency.

62. **Procurement.** As part of this shift in emphasis, it would be timely to revise the Bank’s role in telecommunications procurement. While this is not an issue confined to telecommunications alone, some specific concerns may be noted. It is no longer practical nor cost-effective for Bank telecommunications staff to be repeatedly inserted in the critical path of procurement. Often the issues arising in telecommunications procurement (mostly on commercial aspects) are not sector-specific. Conversely, telecommunications staff cannot be expected to have detailed expertise in all technologies, complex and rapidly changing as they are. The small numbers of operations result in bunching and sometimes excessive internal processing delays. Alternatives may include greater reliance on Bank procurement units with strong commercial and processing experience, which could be involved with the telecommunications project from the start and be accountable to the task manager for the quality and timely Bank processing of procurement documents. In particular, the procurement units could be responsible for (a) reviewing the commercial conditions of the bid and the layout and general approach to technical specifications, (b) seeking help from telecommunications staff, and through them from external specialists when needed, in reviewing the technical contents of bids, and (c) supervising procurement, including handling evaluation reports and contracts.

63. In most cases it would be feasible during project preparation to assess whether the client has the competence to prepare bidding documents and handle evaluation and contracts. Where in doubt, the client could be required to retain consultants experienced in procurement under Bank guidelines to assist them. The Bank’s and the clients' procurement work would also be facilitated by developing and from time to time updating standard telecommunications-specific bidding documents, or clauses (e.g., for qualifying equipment as proven, defining spare parts requirements) and modules to be used in assembling bidding documents. Although in most developing countries there are market-oriented procurement policies and procedures in place, and the Bank’s role is largely to help improve them, in other countries (notably Eastern Europe and the former Soviet Union), the Bank may need to help set these up from scratch. A critical issue in countries with domestic telecommunications manufacturing is establishing fully commercial relationships between operators and manufacturers.

64. The Bank’s traditional concern with types and quantities of equipment should give way to specifying performance or output objectives. One approach would be a two-stage bidding process, which in the first stage asks for competing network solutions to meet specified service objectives, and in the second stage invites bids for equipment to realize the chosen solution. Bank staff and procurement advisors would work out with the client early in the project cycle a strategy to deal with network development, competing technologies, and tradeoffs between standardization and innovation. These are becoming the main areas where the Bank’s technological advice is needed.
65. **Human Resources.** The evolving role of the Bank in telecommunications places new demands on staff, and requires changes in the mix of skills and on the balance between internal expertise and external assistance. The traditional distinction among telecommunications specialists of different professional backgrounds (e.g., economists, financial analysts, engineers) is breaking down. Telecommunications specialists are increasingly overlapping their areas of interest, and are becoming involved to some degree in sector policy and regulatory issues and in the practicalities of reform and restructuring. In particular, driven by the necessary changes in our clients' approach to system development as much as by the inherent impossibility of Bank staff to maintain competence in all relevant technologies, the necessary focus of the Bank's telecommunications engineering is changing from particular system components to strategies for technology innovation, spotting major issues on technology choice and application, and improving the process for network design. Telecommunications finance specialists, while still requiring competence in traditional accounting and financial analysis, are becoming mainly involved in financial management and investment financing. Expertise in telecommunications policy and regulation, in telecommunications enterprise management, and in investment financing, are needed in virtually all new Bank operations. Recruitment of telecommunications staff and long term consultants is starting to reflect these changing needs. It would also be helpful to build up and organize a reserve of external consultants with Bank experience on call to provide complementary expertise as and when required in a wide range of subjects, including technology.

66. A development program is needed for all staff involved in telecommunications. On-going somewhat *ad hoc* efforts to maintain and update the skills of telecommunications specialists would gain by structuring into rolling multi-year programs including short external courses (e.g., university, industry), attendance to conferences and seminars, periods spent by staff in operating companies and manufacturers, and industry specialists visiting the Bank. A deliberate effort is also needed to assist Bank staff and managers that are new to the telecommunications sector. As telecommunications becomes better integrated with country economic strategy, a growing number of non-specialist staff are becoming involved in this sector and would benefit from a structured introduction to the sector. This would make it cost-effective to include telecommunications courses in the Bank's training program.

67. Incorporating telecommunications into the mainstream of country economic and sector work would be facilitated by establishing in each country department one staff member responsible for ensuring that telecommunications is integrated into the country's economic and sector work. The specific ways to implement this would vary among country departments, depending on the extent to which they are already involved in telecommunications and the relative roles of country operations divisions, sector operating divisions, and central specialist staff.

68. Closer interworking among relevant staff from different Bank units and with IFC and MIGA would enhance overall effectiveness and accelerate learning from experience. Telecommunications operations, while remaining overall highly specialized, increasingly have elements in common with those in other sectors. In particular, generic expertise in enterprise restructuring, privatization, and investment financing developed in other sectors, can be of value to telecommunications operations, and vice versa. There are significant similarities between telecommunications and power, for example, regarding finance, institutions, and linkages between public and private sectors. Synergies can also be developed at the level of specific operations between the Bank's work in telecommunications and information technology.

69. Extending cross-regional specialist support and peer review beyond the current limits, and building up a global telecommunications sector work program involving all regions, would add to the
quality and credibility of Bank work. Being involved in telecommunications in many countries in all
regions gives the Bank a unique opportunity to draw cross-country experiences and lessons and help
incorporate these findings in new sectoral and investment designs.
NOTES AND REFERENCES

1. It is proposed that this paper may provide a basis for regional discussion and follow-up. For example, given the appalling state of telecommunications in Central and Eastern Europe, and especially in the former Soviet republics, regional strategies may need to emphasize short-run measures to facilitate trade and production as well as long-run development issues. Perhaps it will be necessary to consider more radical reform measures and investment strategies than elsewhere.

2. Telecommunications manufacturing can be more appropriately examined as a part of industry. Although linked by the procurement policies of the operating companies, the supply of telecommunications services and the manufacture of equipment used to provide these services are essentially different economic activities now almost universally undertaken by separate companies.

3. Loosely speaking, the Information sector comprises all activities that involve the production, processing, and distribution of information and knowledge, as distinct from physical goods. It includes activities that primarily comprise the handling of information, such as banking and government, as well as the information components of other activities, such as accounting in a factory and management of a farm. The Information sector thus includes activities traditionally counted under the primary, secondary, and tertiary sectors. The Information sector has been quantified by a number of researchers in the USA, Europe, and Japan, since the 1950s. Data for developing countries is more limited. However, several studies in the Asia and Pacific region in the early 1980s, using data from the late 1970s, give some indicative figures of the information sector as proportion of GDP, e.g., Singapore 25%, Indonesia 19%, Malaysia 14%.


6. Total telecommunications investment in the developing world grew from about US$ 3 billion in the 1970s to US$ 7 billion in the 1980s and to US$ 11 billion in the late 1980s, all in 1980 dollars. These are tentative figures based on international statistics on growth in telephone lines and average investment cost per line under Bank projects.

7. These investment requirements of telecommunications in the 1990s are likely to be two to three times larger than those of electricity generation and distribution.

8. The latter figure is almost certainly too low. For example, according to Bank estimates, Russia and the Ukraine alone need investments in the order of US$ 4 billion per annum.

9. The years indicated in parentheses refer to when controlling interest in the state telecommunications enterprises was sold to private investors/operators. The balance of state-owned shares were sold in subsequent years. As of mid-1992, about 60% of Venezuela's CANTV shares are still state-owned.

10. Concerns about national security, which loomed large in telecommunications policy discussions of the 1960s and 1970s, have waned in many developing countries as telecommunications facilities become widespread and are viewed as production and consumption items commercially available to all buyers. In some countries, however, national security is still a politically significant issue, compounded by a broader concern about foreign control of key factors of economic production and distribution.

11. The following are examples. International competitive bidding for a ten-year license to provide cellular services in a given region (more than one or two are seldom possible in terms of market size and radio spectrum capacity). Competitive supply of subscriber terminal equipment (e.g., telephone sets, PBXs) subject to technical standards and type approval to ensure network compatibility. Unrestricted competition in the provision of services such as shared data processing, information,
electronic mail, packet-switched data, and store-and-forward facsimile and telex.

12. For example, cellular, PCN, mobile satellite.

13. For example, to upgrade quickly existing networks (e.g. in Eastern Europe) and for disaster relief.

14. In this note we use the term "privatization" to mean the transfer of ownership control of an enterprise from the state to the private sector. We use "increased private sector participation" to denote the wider range of modalities to introduce or expand private capital and management in the sector.

15. See for example, Peter Smith and Bjorn Wellenius, "Mexico Telecommunications: One Year (Plus) After the Reform Program", World Bank, May 1, 1992, mimeo; and Ahmed Gala and Clemencia Torres, "Compania de Telefonos de Chile", 1992, draft. These findings on the impact of privatization are consistent with those in other sectors; see S. Kikeri, J. Nellis and M. Shirley, Privatization: The Lessons of Experience, Washington, DC, The World Bank, 1992. Private ownership, however, is not a necessary condition of good performance. Singapore, Korea, and Taiwan, in particular, are examples of fast-growing, modern, highly efficient state-owned telecommunications operations.

16. For example, the sale of state-owned shares in Telefonos de Mexico yielded about US$ 4 billion. Annual net flows of funds from TELMEX to the treasury have also increased, despite abolition of the special telephone tax, as result of ending government contributions to investment and rapidly growing taxable profits.

17. For example, sale of the telephone company allowed the Argentine government to recover about US$ 5 billion of state bonds from foreign markets.

18. Subscriber financing can also be used to diversify company ownership, and as a price mechanism to efficiently allocate scarce supply.

19. For example, sale price can be enhanced by giving the new owners extended monopoly privileges, whereas reducing service costs and promoting responsiveness and innovation requires competition and regulation.


21. It is often said, correctly, that today's extensive networks in developed countries were built with the help of extensive cross-subsidies facilitated by integrating all services under monopoly operators. This is one of the arguments given in favor of limiting competition in basic services and networks for a long initial protection period following privatization. On the other hand, in increasingly market oriented international and domestic environments, rebalancing monopoly tariffs to reflect costs becomes a major objective of sector policy along the way towards creating conditions for effective and sustainable competition. Moreover, these two objectives are not mutually exclusive, and can be reconciled, for instance, by a mix of tariff rebalancing to render local services profitable, attracting new entrants to the basic networks business, and allowing interconnection charges that reflect the value of basic network expansion to other operators.

22. A growing number of major telecommunications operating companies from developed countries are getting into ventures in developing countries as part of strategies to globalize their business. Some of them are already now involved in several developing countries, and the trend is likely to continue. However, there are limits to the pace at which these companies can divert internal human and financial resources to foreign ventures, and in the context of a growing number of opportunities they can be increasingly selective.

23. The size and relative importance of the presence of experienced foreign operators varies considerably, from rather marginal in the companies that already were good performers before privatization (e.g., Chile's CTC) to critical where major overhauls are required (e.g., Argentina), with the middle ground occupied by companies where foreign experts play an important advisory role but are not centrally involved in management (e.g., Mexico).
24. International capital markets may have little interest in emerging companies located in relatively risky countries, where many future privatizations will be attempted, or they may require returns so high as to be politically unacceptable. Developing-country capital markets already appear to be too small to meet the requirements of several privatized companies. Although in the initial years internally generated funds are likely to meet most of a company's investment requirements, a better mix of sources of funds including fresh equity capital and long-term debt will be essential to sustain growth in the longer run. And in most developing countries, a large proportion of telecommunications equipment will continue to be imported, posing a burden on the balance of payments. The problems of raising capital may be especially acute for telecommunications companies, given this sector's high capital intensity, large initial investments required to modernize and expand facilities, and mainly local currency revenues.

25. The government's expectation of long term commitment by foreign operators is often reflected in the new sector laws and regulations, the terms and conditions of sale, and the transfer contracts and franchises, all of which provide for medium and long-term incentives and obligations. In certain cases, however, it can be argued that the foreign operator has mainly secured a profitable management contract supplemented by a minor equity interest, and that under those conditions the cost of exiting could be lower than that of staying if things get rough. Others, however, point out that major operating companies, intent on building up an international presence, are unlikely to walk out or do less than their best.

26. Some observers also believe that only five or six major operating companies will dominate the world market in which state telecommunications enterprises are sold. If such is the case, the Bank's knowledge of world business trends would help governments deal with potential cartel-like proposals. Other analysts, however, believe that in the long run, at least 12 to 15 companies will be in this business, and that the market will continue to be vigorously competitive. Under that scenario, the Bank's help would focus on the privatization process to make best use of competition to the selling country's advantage.

27. The impact and cost resulting from slow start-up of regulation and competition has not been assessed, but there is anecdotal evidence that lends support to these concerns. For example, in Chile issues of new entry to basic services markets have been under review by the telecommunications regulatory agency and litigated in the anti-trust and regular courts for several years without coming to closure. This has delayed new service offerings to customers who presumably would benefit from competition, and has immobilized substantial amounts of equipment purchased by one of the operating companies. In Argentina, lack of resolution by the regulator regarding clarifications of the scope of the concessions of the two regional privatized operating companies reportedly has resulted in slower investment than would otherwise have been the case.

28. For example, the concession can define the terms and limits of competition, the required capital expansion of the network, and the prices or rules to set the prices to be charged. In particular, setting caps for prices of baskets of services has the potential of simplifying price regulation, providing the operator with incentives to contain costs and a degree of freedom to rebalance tariffs to reflect changing factors, and affording some protection to consumers. However, the targets for service growth and quality cannot be set in advance for the duration of a concession (typically 20 years or more) but may have to be revised, say, every five years. Tariff rebalancing and the regulation of the interface between competitive and monopoly segments of the businesses cannot be left to self-enforcement alone, partly because there is a large imbalance in resources and information between the dominant operators and other players. The productivity gain factor in a price cap formula has to be adjusted from time to time in the light of actual evolution of costs (experience in Mexico, for example, only little over one year after privatization, suggests that the price cap formula underestimated widely the initial gains from accelerated growth, technological change, and competitive procurement).

29. In Chile, telecommunications regulation is partly sector-specific (e.g., licensing, spectrum control) and partly relies on anti-trust law and courts. The arrangement, praised by some analysts and probably the best-working in developing countries so far, has however not been particularly effective in dealing with issues of competition. In New Zealand, as the government privatized the state operating enterprise and opened all markets to free entry, it chose for the time being not to set up a telecommunications-specific regulatory function but rather rely on anti-trust law and the courts. The government, however, has implicitly kept open the option to intervene more closely, if experience shows this is necessary.

30. For example, a 0.5% levy on the operators' revenues in Argentina and Venezuela are earmarked for financing the regulatory agencies, but the mechanism is not working as originally envisaged. In Venezuela the proceeds of the levy are allocated to the regulator annually by congress, and salaries of the regulatory agency's staff is still subject to civil service limitations.

32. For example, large switching nodes fed by remote interface electronics close to the customer are becoming more cost-effective than current solutions based on smaller switches co-located with demand centers and connected to customers through cables. Such networks can have a number of forms, ranging from fiber-to-the-curb to disaggregation of the switch itself.

33. The following are examples from developed countries. Since the beginning of electrical communications in the 1840s, only the telegraph network has disappeared. Telex subscribers have only started to decline in recent years, despite better solutions (e.g., data, fax) being in place for some two decades. In the Nordic countries there is a vigorous market for second-hand manual mobile telephones, still to be operational beyond the year 2000 despite at least two new generations of mobile (including cellular) systems being introduced.

34. To a large extent, this relates to the convergence of what used to be quite different technologies. For example, with digitalization of telecommunications systems, differences among voice, data, text, graphics and video can only be made at the user end, but are all bit-streams for purposes of processing and transmission. Major telecommunications equipment now essentially consist of specialized computers and software, and its operation and maintenance is akin to that of a data processing center; there is striking similarity between network management centers for telecommunications, power, and railway systems.

35. Although ownership does matter, it is not the sole determinant of efficiency. Singapore, for example, has outstanding telecommunications despite the operator being state-owned. The Republic of Korea and the Republic of China (Taiwan) provide other examples of highly successful state telecommunications operations. Yet these are, in a sense, the exceptions that prove the rule. Also, Singapore telecommunications is already slated for privatization.


37. For example, several traditional Bank telecommunications investment projects also sought to give the operating entities greater autonomy from government, but this objective proved elusive in practice in the absence of broader changes in sector structure. The speed of change of telecommunications makes this sector particularly inappropriate for continued reliance on organizations that lack the freedom to respond effectively.

38. The performance of state operations depends, among other factors, on the quality of its senior managers. The Bank, however, traditionally has not intervened in the selection of telecommunications managers (although it has done so in some other sectors).

39. There may be a conflict among some of these objectives. For example, limiting the state telecommunications enterprise's participation in new lines of business (e.g., cellular) may reduce the interest of prospective buyers when conditions are otherwise ripe for privatization.

40. In countries where privatization was completed very quickly, such as Argentina, Mexico, and Venezuela, the Bank was left without specific leverage on the much slower but critically important stages of developing regulation and competition.

41. The debate before the Bank's recent approval of the first Bank loan to a private telecommunications company (philippines, late 1992) illustrates the extent and scope of controversy that needs to be sorted out.

42. Specific government undertakings as guarantor or borrower of a Bank loan, such as regarding tariffs, taxation, franchises, use of the radio spectrum and rights of way, access to foreign currency, and repatriation of profits, may enhance investor confidence in the government's commitment to key elements of policy and regulation. Bank funds available to prospective operators/investors could make otherwise marginally viable privatization offerings more attractive by leveraging new investments with long-term debt. This may be particularly important to ensure overall financial viability of reforms in countries where major up-front system rehabilitation or modernization is needed. Bank lending could be processed in parallel with privatization, and become effective at the time ownership changes hands. This may attract relatively small foreign operators capable of doing a good job at running a privatized enterprise but unable to mobilize all the necessary
capital, especially for ventures in some of the less developed countries.

43. In particular, lending to the privatized company with state guarantees would give the Bank a handle on the execution of regulatory development plans, such as those prepared by governments as condition of disbursement of adjustment loans, and on critical steps to implement competition policy. For example, the company as borrower of a Bank loan could be obligated to disclose information necessary for effective overview by the regulator, which otherwise it would not be inclined to do. The government, as guarantor, could be committed to promulgate detailed regulations and specific procedures for licensing new entrants in specific service markets.

44. There may be a conflict, for example, between the government's interest as regulator to enforce price controls over the privatized company on the one hand, and its financial liability as on-lender (or guarantor) of Bank funds to that company. Another example is that the government's interest as financier of a monopoly company could bias its position regarding opening up the core long-distance business to competition.

45. An important joint role of the Bank, IFC, and MIGA is putting together risk reduction packages where needed to attract private investment in telecommunications.

46. The Bank's expanded cofinancing program could also be useful in mobilizing private funds for investment by both public and privately owned telecommunications enterprises. Those countries with limited access to commercial financing due to sovereign risk would particularly benefit from this program.

47. This is reflected in the recent reorganization of IFC. The new Infrastructure Department includes a team of about six professionals that specialize in telecommunications operations, compared with only one a year earlier.

48. The Foreign Investment Advisory Service (FIAS), a joint venture of IFC, MIGA, and the Bank, can help countries improve the environment for foreign investment, especially regarding administrative and legal matters.

49. For example, telecommunications is seldom covered in the literature of economic development research. Most of what is known about telecommunications and economic development has been produced by telecommunications specialists, and disseminated primarily among their peers.

50. One way of dealing with this implementation issue is to place company-specific covenants in project agreements signed between the company and the Bank, or in on-lending agreements approved by the Bank.
Annex 1:
The Bank's Past Involvement in Telecommunications

The Bank (including IDA) has been involved in the telecommunications sector since its early days. Lending operations have comprised stand-alone telecommunications loans and credits, telecommunications components of operations in other sectors, and components of economic adjustment programs. Telecommunications has been included to some extent in country economic and sector work, and a small global telecommunications sector work program has contributed to building the Bank's stock of knowledge. An assessment of the Bank's impact and performance in the telecommunications sector is underway, with the participation of OED.

Telecommunications Loans and Credits

The Bank (including IDA) has lent from the 1960s until today about US$5 billion for about 120 stand-alone telecommunications investment projects worth over US$20 billion in 54 developing countries (of which US$ 1.8 billion was lent in FYs1987-91 for 23 projects worth US$9.2 billion in 21 countries). This makes it the largest multilateral source of telecommunications financing. Telecommunications, however, amounts to only about 2% of Bank lending. The number and total amount of telecommunications loans and credits varies considerably year to year, depending on country priorities and availability of other funds. Bank loans and credits typically finance 15%-50% of total project cost, currently averaging about 20%. The rest comes mainly from internally generated funds (50%), supplier and export credits and aid (25%) and government and other sources (5%). The Bank's telecommunications loans and credits often finance a time slice (e.g., three to five years) of the whole sector's investment program. Increasingly, however, these operations focus on selected parts of the program of particular complexity or urgency.

Telecommunications Components in Other Operations

Telecommunications components are found in Bank loans and credits for other sectors, especially transportation, agriculture and rural development, energy, and population, health and nutrition. In three recent years for which data have been collected, 16% of all Bank operations in other sectors had telecommunications components worth about $100 million per annum of which the Bank financed 56%. These components are mostly small and embedded in larger parts of the project, but in some cases they comprise a major part of the whole operation.

Economic Adjustment Programs

Explicit recognition is increasingly given to telecommunications in economic reform programs supported by Bank loans and credits. For example, telecommunications enterprises have been included in public sector management projects in Congo, Ecuador, Ghana, Jamaica, Mali, Mauritania, and Nigeria, among others. Several of these relatively low-cost initial interventions laid the groundwork for subsequent stand-alone telecommunications operations.

A major growth area is public sector restructuring and policy reform. In recent years, about 20% of all adjustment lending included some support for telecommunications.
assistance for telecommunications in Latin America since the mid-1980s has been as part of quick-disbursing public enterprise restructuring and policy adjustment loans in the range of $300 million to $1 billion. This includes the privatization of state telecommunications enterprises completed in Argentina, Mexico, and Venezuela. Through these operations, the Bank has assisted in designing sector policies and reforms, preparing new legislation and regulations, organizing and carrying out privatization, and establishing telecommunications regulatory institutions. Smaller companion operations in the range of $20 million to $30 million, provide funds for technical assistance, including designing and initially implementing plans to build up regulatory capacity.

**Country Economic and Sector Work**

Sector work has played an important role in developing the telecommunications policy dialogue with the government and operating entities, acting as a catalyst for discussion and decision-making within the country, and providing the necessary framework for possible Bank lending. Telecommunications has been increasingly included in the Bank's economic country analyses and assistance to governments in formulating comprehensive development strategies. For example, telecommunications experts have taken part in the Bank's public sector investment reviews in Costa Rica, Ecuador, Ghana, Philippines, Senegal, Zambia, and Zaire, among others. Sometimes, stand-alone telecommunications sector reports have been prepared as inputs to country economic and sector strategy formulation. For example, a report on Indonesian telecommunications, focusing on sector policy and enterprise organization and management, was completed in 1989. A major survey on China, including preparation for the first time ever of commercial financial statements, was completed in 1991 leading to a medium-term policy oriented action program agreed in 1992. A comprehensive analysis of the telecommunications sector is always undertaken in the early stages of project identification. Critical aspects encountered during early project preparation are also sometimes the subject of special sector studies, such as on policy issues and options in Fiji in 1988.

**Global and Regional Sector Work Program**

A small global and regional telecommunications sector work program has helped renew and disseminate the Bank's cross-country sector experience, develop broadly applicable analytic tools and approaches to policy and strategy issues, and participate in other international organizations. For example, outputs in FY91 included a seminar on recent experiences in telecommunications reform attended by over 100 senior government and business officials from 44 countries; the manuscript for a revised edition of the Bank's 1983 book on telecommunications and economic development which is the standard reference in this field; and guidelines for calculating financial and economic rates of return of telecommunications projects.
ELEMENTS OF TELECOMMUNICATIONS POLICY, REGULATION
AND LEGISLATION

A. Market Structure

Scope of existing or new monopoly operating entities
- services
- facilities

Services and facilities to be provided under competition,
- in addition to the monopoly operators
- instead of them

B. Ownership of Operating Entities

Scope of state and private ownership
- state participation
  government or public sector enterprises
  participation in companies
  100% state ownership
  mixed ownership
- private sector participation
  owners
  joint ventures
  foreign participation

C. Conditions and Rules of Market Entry and Exit

Obligations of the operating entities
- access to service
  principles (incl. definition of universal service)
  objectives
- quality of service
  performance indicators
  objectives
- medium-term expansion and improvement programs
  specific growth/quality targets
- technical standards
- interconnection
  with other operating entities
  domestic
  international
  with private or dedicated networks
  with subscriber terminal equipment
  with information services providers

Mechanisms
- designation of authorized operating entities
  franchises
  licenses
- facilities licensing
  radio spectrum
D. Pricing and Cost Recovery

Pricing
- principles
  - monopoly services
  - competitive services
- procedures

Cost recovery guidelines
- accounting
  - depreciation
  - cost allocation among services
- allowable returns on investment
  - rate of return or price caps
  - dividends and payout

E. Institutional Roles

Location of authority
- government
  - president/prime minister
  - cabinet
  - sectoral minister
- independent regulatory agency

Process to establish policy

Process to monitor/enforce compliance with policy
- relationship between operating entity and government
  - approval of investment programs
  - budget
  - service performance targets
  - application of other government policies
  - procurement
- regulatory functions
  - obtain information from operators
  - review investment programs
  - interpret policy
  - enforce sector laws
  - settle disputes
- relationship between regulatory agency and government
  - appointments
  - appeals
- relationships with judicial system

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