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A STUDY OF THE
FINANCING OF RURAL TELECOMMUNICATION INVESTMENTS

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EXECUTIVE SUMMARY

This paper is concerned with sources of investment capital for rural telecommunications infrastructure in developing countries. It is directed primarily to policy makers in telecommunications organizations or national planning agencies in developing countries, and secondarily to other development professionals. In outlining the possible sources of financing for rural telecommunication investments, the paper reviews not only existing funding programs by several multilateral and bilateral agencies, but also the needs of developing nations for telecommunication facilities, the considerations surrounding the development of these facilities, and the constraints that have limited investment in the expansion of these facilities, particularly in rural areas.

The costs of providing telecommunication service to rural areas have diminished rapidly over the past ten years, and they can be expected to diminish further as more powerful satellite systems requiring less expensive ground segments are brought into use. However, the use of the newer technologies for rural service will depend on the availability of investment capital and the commitment of governments to expanding rural service.

While the financing of local currency expenses, generally about 40 percent of the total cost of a project, can be arranged by generating surplus revenues through appropriate tariff policies, the foreign exchange costs must often be financed through multilateral or bilateral funding agencies, or supplier credits. Multilateral agencies, such as the World Bank, the Inter-American Development Bank, the Asian Development Bank, and similar agencies, provide long-term loans (20 years or more) at commercial and subsidized interest rates. Multilateral loans generally include conditions relating to the performance of particular facets of the financed project. While multilateral banks have generally accorded telecommunications a low priority, they have played an important role in promoting rural telecommunications investment.

Bilateral agencies, such as the Export-Import Bank of the United States, provide loans or loan guarantees on a short-term basis, generally about eight years. Bilateral loans are relatively easy for developing nations to arrange and are not tied to particular facets of projects.

Supplier credits may be arranged through equipment suppliers or banks at prevailing commercial interest rates. These loans are based on the overall creditworthiness of the borrower, which in the case of telecommunications loans is usually the government, and not on a particular project. Both bilateral loans and supplier credits can place great financial strain on a telecommunications administration because of the cash flow consequences of the short repayment period. Further, commercial interest rates may increase project costs, thus making rural telecommunications investments, with relatively low financial returns, less attractive or not feasible at all.

The final decision on how to finance the foreign exchange component of a rural telecommunications project will depend on the country's overall development plan, its telecommunications expansion strategy, the availability of capital from private banks or suppliers, and the ability to pay international, as opposed to subsidized, interest rates.

The paper is divided into four chapters. Chapter One discusses the need for telecommunication facilities and the historical patterns that developing and industrial nations have followed in providing urban and rural telecommunications.

Chapter Two outlines the financial constraints that have been a major factor in limiting development of telecommunication facilities in the developing countries.

Chapter Three deals primarily with the lending policies of three sources of funding for telecommunication investment in developing nations: the World Bank Group, the Inter-American Development Bank, and the Export-Import Bank of the United States. Several other multilateral agencies are discussed briefly.

Finally, Chapter Four summarizes the salient data contained in the paper and the main conclusions reached.

Chapter One

THE CASE FOR AND FACTORS AFFECTING INVESTMENT IN TELECOMMUNICATIONS IN DEVELOPING COUNTRIES

*This chapter serves
generally academic +
not those for the average
reader*

A. THE NEED FOR TELECOMMUNICATION FACILITIES

Telecommunications serves as the "nervous system" of modern societies and economies; it is multipurpose in use and pervasive in effect. Telecommunications provides significant social and economic benefits critical to raising the quality of life by improving business productivity; augmenting opportunities for investment in new domestic and internationally-oriented economic activities; and making possible the extension of access to health, education, security, government administration, and other services that can collectively promote economic growth and social well-being.¹ Telecommunications officials generally recognize that integrated telecommunication services are usually more efficient in terms of capital investment, operational costs, and energy consumption than are other forms of communication or competing forms of transportation.

The failure to provide adequate, high quality, reliable telecommunication services is a major contributor to the generally lower economic and administrative efficiency of the developing countries. The penalties of inadequate investment in the telecommunications sector include the following:

1. Available facilities are overloaded and overused, leading to a poor overall quality of service.
2. Major economies of scale inherent in telecommunications are lost, resulting in higher expansion costs.
3. Inefficient communications expenditures are incurred by both the public and private sectors, as relatively small, dedicated telecommunication facilities are constructed to meet urgent communication requirements. The construction of these facilities further diminishes the chances of achieving significant economies of scale in the public telecommunications system.
4. High economic opportunity costs are incurred, resulting from both the failure to meet demand adequately at the main centers and the failure to expand into new areas of economic significance.
5. Public and private investments are spatially inefficient, as they are

1. For a discussion of the economic returns resulting from rural telecommunications investments, see Heather Hudson, et.al., The Role of Telecommunications in Socio Economic Development (Washington, D.C.: Keewatin Communications, 1979); I. de Sola Pool, et.al., "Appropriate Telecommunications for Rural Development" (Cambridge, Massachusetts: Massachusetts Institute of Technology, 1981); Communications Studies and Planning International, The Impact of Telecommunications on the Performance of a Sample of Business Enterprises in Kenya -- A Research Report to the I.T.U. (New York: CSP International, 1982).

concentrated in areas where communication is easy, thus substantially limiting significant economic activity to urban locations.

6. The telecommunications entity is often an inefficient and unprofitable operation, which often adds the financial burden of high tariffs.

B. INTERNATIONAL TELECOMMUNICATION INVESTMENT PATTERNS

Levels of telecommunication expansion in the developing world have generally lagged seriously behind those in industrialized countries. In 1979 the World Bank analyzed telecommunications growth rates and investment as a percentage of Gross Domestic Product (GDP) for 12 developing and 12 industrialized countries.² This study found that the average telephone density per 100 persons was 3.9 in the developing countries, compared to 44.2 in the industrialized countries. The annual rate of growth in telephones was 9.8 percent in developing countries, compared to 4.6 percent in North America and 8.0 percent in Europe. Investment as a percentage of GDP was 0.35 percent in developing countries, compared to 0.90 percent for industrialized countries. The results of this study are detailed in Table 1.

For the most part, the industrialized states are providing augmented services with a telecommunications infrastructure that basically serves the majority of the population and largely meets demand. Developing nations are still attempting to provide a basic telecommunications infrastructure accessible to the majority of the population. The demand for service in developing countries is frequently far in excess of available capacity, leading to significant levels of suppressed demand, which often approaches or even exceeds the total number of connected subscribers.

Conservatively, the developing countries' network growth rate of 9.8 percent equates to a demand growth rate of from 12 to 15 percent, taking into account the long waiting lists for service that have built up over a period of years in most developing countries, and the considerable suppressed demand. While the developing countries' growth rates are relatively high, increasing them to meet this demand entails considerable difficulties in mobilizing institutional, personnel, and particularly financial resources.³

C. THE INVESTMENT PATTERN IN DEVELOPING COUNTRIES AND THE CASE FOR BALANCED DEVELOPMENT

The pattern of telecommunications investment in developing countries has been heavily oriented toward concentrating facilities in and around urban areas and providing international facilities, despite the fact that such investment can help promote rural development, and that its absence can both hinder rural development and impose costs on society as a whole.

2. R.J. Saunders and C.R. Dickenson, "Telecommunications: Priority Needs for Economic Development," ITU Telecommunication Journal, Volume 46, No. IX (1979), pp. 566-570.

3. Review of published data shows that, excluding city networks, it is difficult to maintain growth rates in excess of 20 to 25 percent per year. Only one country has been able to exceed the 25 percent figure over an extended period.

Table 1

Data on Network Growth Rates and Investment as a Proportion of GDP

| Area | % of world population | % of world telephones | Telephones per 100 population | Annual growth in telephones |
|----------------------|-----------------------|-----------------------|-------------------------------|-----------------------------|
| North America | 6.0 | 42.2 | 72.0 | 4.6% |
| Europe | 19.2 | 36.2 | 18.9 | 8.0% |
| Japan | 2.8 | 12.2 | 43.6 | 11.9% |
| Oceania | 0.5 | 2.1 | 38.1 | 6.2% |
| Developing Countries | 71.5 | 7.3 | 1.1 | 9.8% |

Average Telecommunications Development per annum as % of GDP

| Developed Countries | Telephones % GDP | per 100 population | Developing Countries | Telephones % GDP | per 100 population |
|---------------------|------------------|--------------------|----------------------|------------------|--------------------|
| United States | 0.83 | 71.8 | Venezuela | 0.51 | 5.9 |
| Canada | 1.07 | 60.4 | Upper Volta | 0.27 | - |
| Germany | 0.82 | 34.2 | Burma | 0.23 | 0.1 |
| United Kingdom | 1.23 | 39.4 | Chad | 0.05 | - |
| France | 0.68 | 29.3 | Kenya | 0.30 | 1.0 |
| Italy | 0.82 | 27.1 | Malaysia | 0.34 | 2.7 |
| Japan | 1.05 | 42.6 | Pakistan | 0.32 | 0.3 |
| Australia | 1.09 | 39.5 | Thailand | 0.30 | 0.8 |
| Switzerland | 1.13 | 63.8 | Singapore | 0.53 | 16.3 |
| Sweden | 0.47 | 68.9 | India | 0.17 | 0.3 |
| Belgium | 0.60 | 30.0 | Fiji | 0.62 | 5.3 |
| Spain | 1.06 | 29.9 | Costa Rica | 0.60 | 6.2 |
| Average | 0.90 | 44.2 | | 0.35 | 3.9 |

Note 1. These data have been taken from "Telecommunications: Priority Needs for Economic Development," by R.J. Saunders and C.R. Dickenson (ITU Telecommunications Journal, September 1979). The data on telephone densities for the individual countries have been taken from The World's Telephones as related to the data of the other figures.

Note 2. These tables deliberately do not include the OPEC countries, where rates of development and investment have been much higher and frequently exceed those in the developed countries.

Note 3. A number of the developing countries listed have increased their levels of investment since these tables were compiled.

Transition from p 2
available data in World Bank Appraisal and Sector reports shows that from 60 to 90 percent of the population of developing countries generally has access to less than 20 percent of the available facilities.⁴ The statistical evidence indicates that the industrialized countries' networks have been developed on a substantially balanced national basis, while the developing countries show clear underdevelopment of networks nationwide, with the smaller towns and rural areas far less developed than the cities.

For example, data for one country with a population of 80 million shows that 54 percent of available telephones are concentrated in three main cities, 24 percent in other large towns, and only 22 percent in the thousands of small towns and rural areas in which about 80 percent of the population lives. Despite recent efforts to expand rural facilities in that country, only 1,700 of the many thousands of communities have access to telephone facilities, and in 56 percent of the communities this consists only of Public Call Office (PCO) facilities. Telephone density per 100 population is 0.40 for the country as a whole, 1.88 for 15 major towns and cities, and 0.13 for the rest of the country.

D. FACTORS AFFECTING THE PROVISION OF RURAL TELECOMMUNICATIONS

Telecommunications investment in developing countries is concentrated in urban areas precisely because the high concentration of businesses and relatively affluent residents generates a large and clearly defined demand for telecommunications and offers the greatest potential financial return. Not coincidentally, these businesses and citizens are generally more politically articulate than their rural counterparts and better able to press their demand for telephone service.

Also, until recently, telecommunication facilities designed to provide service to densely populated areas were far less expensive in both capital and operating costs, and offered far greater economies of scale (and hence, greater efficiency), than facilities designed for rural use. Historically, rural systems have used facilities requiring high capital costs relative to the potential numbers of subscribers. Such systems -- generally using combinations of high frequency radio, microwave, and open wire -- have not only been difficult to construct in remote areas, but have sustained high operating costs due to both power and staffing requirements.

The combination of these two factors -- the relatively high cost of rural service and the large demand for continuing investment in more profitable urban services -- has dictated the low priority that rural services have historically been accorded. Because the rural sector has limited capital and must compete with other sectors for foreign exchange, investment has generally lagged in what is seen as a relatively marginal area. Even where facilities have been provided, they have often consisted only of Public Call Offices, which are largely a one-way communication device (i.e., outgoing calls) and do not provide for the full economic and financial advantages that accrue with telephone exchange service.

4. The distribution of telephones between urban and rural areas is shown in greater detail in Annex 1.

For a variety of reasons, the industrialized countries have accepted the principle that universal telecommunication service is necessary to meet basic social, political, and economic development objectives. The decision to promote universal service has been accompanied by policy decisions relating to the provision of investment capital for rural service, tariff policies to generate sufficient revenues for overall system operations, and subsidization schemes for rural operations. The historical trend in Europe and North America has been to allow the telecommunications administrations to retain surplus revenues (profits), which can be used for continued investment in telecommunications. Sector investment has thus been increasingly divorced from the government fiscal process.⁵

The problems are more difficult for developing countries. The demand for service in the urban centers is unlikely to be filled in the immediate future. If such demand could be fully satisfied, then it is likely that more adequate levels of development in rural areas would follow as a matter of course. Unfortunately, due to the lack of physical and financial resources, this cannot reasonably be anticipated for some time. National administrations will therefore have to make specific commitments to rural telecommunications if such investment is to take place.

There are two basic means of providing operating and capital funds for rural telecommunications: tariff policies that generate sufficient surpluses to allow subsidies to rural areas for operating expenses, and capital investment in new facilities. Agencies such as the World Bank have noted for some time that the telecommunications sector can generate surplus revenues that can be used for internal expansion, provided that tariff policies are directed toward such ends, and that surpluses generated by the telecommunications administration can be used for internal operations.

Ultimately, then, the decision to embark on a strong rural telecommunication program is a political one. The extension of telecommunications into rural areas must be viewed as a major component of a balanced national development program, similar to investments in roads and electricity grids. The requirement for information support for the public and private sector operations critical to rural development means that two-way communication must be provided in a timely and economical manner. Otherwise, rural development has a greatly diminished chance of succeeding.

Initially, a rural telecommunication system will probably not produce an easily measured positive financial rate of return, any more than will rural electrical or road systems. However, when treated as part of the basic development infrastructure, telecommunications will increase the overall income earned by society. And telecommunications must be treated as part of the development sector in reviewing how certain critical components, particularly foreign exchange, will be financed.

5. The techniques used in the United States for supporting the investment in and operation of rural facilities are discussed in Annex 2.

Chapter Two

FINANCIAL CONSTRAINTS AND CONSIDERATIONS

A. FOREIGN EXCHANGE CONSIDERATIONS

The financial constraint is the main deterrent to telecommunications network development. The availability of local financing is generally not the problem, as most telecommunication entities generate sufficient funds internally to pay the necessary taxes and dividends to government and still embark on larger telecommunications development programs. Given the economies of scale possible with larger programs, and the general revenue benefits resulting from telecommunications programs, most telecommunications entities can support present or higher levels of investment for the approximately 40 percent of telecommunications investment paid in local currency.⁶

The problem lies in foreign exchange. While some developing countries have achieved a degree of import substitution through the development of local manufacturing, the intensive requirement for sophisticated technologies in telecommunication systems requires foreign exchange expenditures of about 60 percent of total telecommunication investment costs.

Foreign exchange is a limited resource in most developing countries and is usually subject to allocation by the national planning agency, which will take into account requirements for the economy as a whole and, if borrowing is necessary, the amount of debt the country is able to service. Domestic telecommunication facilities do not generate foreign exchange directly. For this reason, there has been a tendency to neglect them in allocating foreign exchange resources in competition with the productive sectors. This tendency overlooks the contributions that telecommunications makes to foreign exchange earnings through increased efficiency of export production and sales, promotion and operation of tourism facilities, improved efficiency of transport facilities, and the like.

Even though foreign exchange requirements amount to about 60 percent of total telecommunication investment costs, they generally fall in the range of from 0.5 to 2.0 percent of total imports, given the low level of investment in telecommunications as a percentage of GDP. Telecommunications investments also provide tangible revenue earning assets, and in many cases save on consumable goods such as oil imports. Telecommunications administrations, which are essentially technically oriented and not accustomed to operating on a fully commercial basis, have not generally articulated strong economic or financial arguments for increased allocations from a country's foreign exchange resources. It also appears that national planning agencies have not fully analyzed the position of telecommunications in the intersectoral allocation of resources. The development agencies and the World Bank, through their sectoral studies and appraisal reports,⁷ have helped to highlight the

6. Data collected by the World Bank in 1978, the financial details of which are summarized in Annex 3, indicates that local cost financing requirements, which amount to about 40 percent of total investment for telecommunications development, are not a problem.

7. See, for example, the list of World Bank publications in Annex 4.

telecommunication sector's investment problems, and, although much remains to be done, there are indications that a number of developing countries are beginning to increase investment in the sector substantially.

It is appropriate to consider how available investment resources should be allocated, given physical and foreign exchange limitations. As indicated earlier in this review, telecommunication administrations will generally try to allocate resources to meet service pressures, maximize revenues, and minimize investment costs by taking advantage of economies of scale. However, if the needs of the economy and society as a whole are to be met, it is desirable to plan for nationwide development and meet national development objectives. This will require close coordination between the telecommunications administration, the private sector, and the national economic planning agencies.

B. LONG-TERM VERSUS SHORT-TERM CREDITS

Arranging financing which is beneficial to a telecommunication agency's revenues is critical when discussing investment in rural facilities. Given the generally weak revenue performance of rural telecommunications systems, it is essential that all costs, including financing, be minimized. The sources of external financing essentially fall into two classes: short-term loans (usually 6-10 years), and long-term credits (20 or more years). Short-term loans are often provided through supplier credits and are often relatively easy to arrange through a bank, a bank consortium, or a bilateral export promotion bank, such as the Export-Import Bank of the U.S. Long-term credits can be arranged through the sale of bonds or by borrowing from one of the multilateral banks, such as the World Bank. There can be substantial differences in costs to the telecommunications system in choosing between the two different methods.

In view of the long lifespan of most telecommunications equipment, the consequent low depreciation, and the usually rapid increase in net fixed assets, it is important that a major part of the external financing should have long-term maturities if cash flow problems are to be avoided.

A brief example of the problem is illustrated in Table 2. For a hypothetical development program lasting four years, two methods of financing are outlined, one using 20-year long-term financing and one using six-year financing. It will be noted from the two funds-flow statements that, as a result of using short-term financing, a necessary increase in Working Capital/Trust Funds of \$20.1 million is converted into an outflow of \$101.9 million. Debt service coverage also becomes marginal in 1983 and 1984. It is also interesting to note that foreign debt service payments for the years 1982 to 1986 (with further heavy payments due in 1987) amount to \$488.9 million instead of \$355.2 million with longer term financing. (These figures include the servicing of previous debt.) The implication of these examples is that long-term maturities, such as those offered by multilateral lending agencies like the World Bank, are to be preferred, in terms of revenue consequences, to short-term supplier or bank credits. This will be particularly true for rural telecommunications investments where the revenue contributions from the service will be relatively small.

Table 2

Hypothetical Income & Expenditure Statement
 Figures in US\$ millions

*Seems
incomplete*

| | <u>1982</u> | <u>1983</u> | <u>1984</u> | <u>1985</u> | <u>1986</u> |
|--|-------------|-------------|-------------|-------------|-------------|
| <u>Total operating revenues</u> | 197.2 | 235.1 | 288.7 | 334.1 | 387.8 |
| Maintenance and operations | 72.8 | 82.4 | 93.4 | 106.0 | 120.1 |
| Depreciation | 42.4 | 50.9 | 62.5 | 75.8 | 91.2 |
| <u>Total Operating Expenses</u> | 115.2 | 133.3 | 155.9 | 181.8 | 211.3 |
| <u>Operating Income</u> | 82.7 | 101.8 | 132.8 | 52.3 | 175.5 |
| Less: Interest | 32.2 | 35.1 | 39.8 | 46.3 | 49.8 |
| Return on Government Equity | 14.2 | 14.2 | 14.2 | 14.2 | 14.2 |
| Net Income | 36.3 | 52.5 | 78.8 | 91.8 | 111.5 |
| Retained Earnings | 36.3 | 52.5 | 78.8 | 91.8 | 111.5 |
| Average Net Plant in Service (revalue) | 537.7 | 624.5 | 757.9 | 925.1 | 1110.7 |
| Rate of Return on Revalued Assets. % | 15.4 | 16.3 | 17.5 | 16.4 | 15.8 |

Note 1. The interest figures in this statement are those for long-term financing.

Table 2 (continued)

a) Funds Flow Statement - With 20-Year Long Term-Financing

| | FY | | | | |
|---|-------------|-------------|-------------|-------------|-------------|
| | <u>1982</u> | <u>1983</u> | <u>1984</u> | <u>1985</u> | <u>1986</u> |
| <u>Sources of Funds</u> | | | | | |
| Operating Income | 82.7 | 101.8 | 132.8 | 152.3 | 175.5 |
| Depreciation | <u>42.4</u> | <u>50.9</u> | <u>62.5</u> | <u>75.8</u> | <u>91.2</u> |
| Internal Cash Generation | 125.1 | 152.7 | 195.3 | 228.1 | 266.7 |
| Loans & Credits | 33.9 | 55.9 | 65.8 | 89.2 | 25.4 |
| Total Sources | 159.0 | 208.6 | 261.1 | 317.3 | 292.1 |
| <u>Application of Funds</u> | | | | | |
| Capital construction | 94.4 | 140.5 | 172.5 | 208.9 | 84.2 |
| Debt Service: Interest | 32.2 | 35.1 | 39.8 | 46.3 | 49.8 |
| Amortization | <u>21.4</u> | <u>24.1</u> | <u>25.4</u> | <u>28.5</u> | <u>32.6</u> |
| Total Debt Service | 53.6 | 59.2 | 65.2 | 74.8 | 82.4 |
| Payment on Govt Equity | 4.2 | 14.2 | 14.2 | 14.2 | 14.2 |
| Increase/(Decrease) in Working Capital & Trust Fund | (3.2) | (5.3) | 9.2 | 19.4 | 111.3 |
| Total Applications | 159.0 | 208.6 | 261.1 | 317.3 | 292.1 |
| Debt Service Coverage | 2.3 | 2.6 | 3.0 | 3.0 | 3.2 |

Note 1. The pattern of an initial shortage of local funds is normal in the sector and is due to the local expenditures for sites, buildings, civil works, etc., being largely concentrated in the early stages of project execution.

Note 2. The relatively low proportion of total capital construction financed under the loans and credits (39%) is due to import substitution through local manufacture and inflation of local costs due to high customs duties on all imported items.

Note 3. The figures are based on expenditures for the ongoing project and in actual practice increased capital expenditures are to be expected in 1986 for the next project.

Table 2 (continued)

b) Funds Flow Statement - With 6-Year Financing

| | FY | | | | |
|---|-------------|-------------|-------------|-------------|-------------|
| | <u>1982</u> | <u>1983</u> | <u>1984</u> | <u>1985</u> | <u>1986</u> |
| <u>Sources of Funds</u> | | | | | |
| Operating Income | 82.7 | 101.8 | 132.8 | 152.3 | 175.5 |
| Depreciation | <u>42.4</u> | <u>50.9</u> | <u>62.5</u> | <u>75.8</u> | <u>91.2</u> |
| Internal Cash Generation | 125.1 | 152.7 | 195.3 | 228.1 | 266.7 |
| Loans & Credits | 33.9 | 55.9 | 65.8 | 89.2 | 25.4 |
| Total Sources | 159.0 | 208.6 | 261.1 | 317.3 | 292.1 |
| <u>Application of Funds</u> | | | | | |
| Capital Construction | 94.4 | 140.5 | 172.5 | 208.9 | 84.2 |
| Debt Service: Interest | 32.2 | 34.9 | 36.2 | 42.7 | 45.2 |
| Amortization | <u>21.4</u> | <u>68.6</u> | <u>69.9</u> | <u>68.9</u> | <u>68.9</u> |
| Total Debt Service | 53.6 | 103.5 | 106.1 | 111.6 | 114.1 |
| Payment on Govt Equity | 14.2 | 14.2 | 14.2 | 14.2 | 14.2 |
| Increase (Decrease) in Working Capital/Trust Fund | (3.2) | (49.6) | (31.7) | (17.4) | 79.6 |
| Total Applications | 159.0 | 208.6 | 261.1 | 317.3 | 292.1 |
| Debt Service Coverage | 2.3 | 1.5 | 1.8 | 2.8 | 2.6 |

Note 1. To maintain an accurate comparison, interest payments have been calculated on the present onward lending rates used in schedule a).

Note 2. For the short-term funds the lending period used has been six years, with amortization starting in the second year.

Note 3. The figures for 1986 are not representative, as additional capital costs for the next project will commence in that year.

Chapter Three

INTERNATIONAL INSTITUTIONS PROMOTING TELECOMMUNICATIONS INVESTMENT

INTRODUCTION

The main sources of external (largely foreign exchange) funding for the telecommunications sector have been multilateral banks, bilateral lending agencies, and suppliers' credits. Private bank involvement has generally been limited to assisting with supplier credits. Multilateral banks and agencies that have provided financing for telecommunications projects include:

- World Bank/International Development Association
- Asian Development Bank
- Inter-American Development Bank
- African Development Bank
- Arab Bank for Economic Development in Africa (BADEA)
- OPEC Fund
- European Economic Community

Bilateral funding has been provided by:

- Export-Import Bank of the United States (Eximbank)
- U.S. Agency for International Development (AID)
- Swedish International Development Authority (SIDA)
- Canadian International Development Agency (CIDA)
- Great Britain's Overseas Development Administration (ODA)
- West Germany's Kreditanstalt für Wiederaufbau (KfW), or Financial Institution for Reconstruction
- Japan's Overseas Economic Cooperation Fund (OECF)
- Australian Development Assistance Bureau (ADAB)
- Saudi International Development Fund

In this paper the subjects of analysis are limited to the World Bank Group, the Inter-American Development Bank, several smaller multilateral programs, and the Export-Import Bank of the U.S.

A. THE WORLD BANK GROUP

1. Description

The World Bank Group includes four entities under which telecommunications development can be funded. The World Bank and its sister concessionary financing organization, the International Development Association (IDA), have been the principal sources of multilateral funding for the telecommunications sector. The International Finance Corporation (IFC) is the World Bank's affiliate responsible for private sector involvement in financing development efforts in developing countries. In addition, telecommunication financing is often included in loans from other sectors of the bank, such as education or agriculture.

The World Bank handles requests for loans and assistance from developing countries of low to middle income. The International Development Association

is responsible for loans and credits to the poorest developing nations. The Bank is a nonprofit development promotion agency, thus bank loans are offered at favorable interest rates.

The IDA is funded by the World Bank's member nations through a series of scheduled financial replenishments in the form of grants. These grants allow IDA to offer loans to governments subject only to a servicing charge, with a payment term of 50 years. However; lending terms may be tightened in the near future.

Qualification for IDA financing is based primarily on a country's inability to gain credit through conventional sources, a problem generally linked to sustained balance of payment problems. Generally, these countries have annual per capita incomes of less than \$400.⁸ Once IDA recipients have made significant progress in overcoming their economic problems, they are "graduated" from IDA and are expected to seek future loans on Bank rather than IDA terms.

The primary role of the International Finance Corporation is to act as an umbrella organization for syndicating loans by a number of private lenders for development projects that are market-oriented but that would not otherwise be undertaken. The IFC also has funds of its own, which may be tied into syndicated lending activities or offered separately. As the IFC is primarily charged with generating industrial-based loans to private enterprises, and as most telecommunications entities are state owned, the IFC is generally not a prospective source of funding for telecommunications. In its 25-year history the IFC has made only one direct loan for telecommunications development and has provided funds through a local finance corporation for two other small projects.

In addition to direct sectoral lending for telecommunications development, the World Bank Group has disbursed significant funds to finance the purchase of telecommunications equipment as part of broader loans made to other development sectors, such as education, agriculture, energy, and transportation.⁹ How and when such funds are made available is generally related to the individual project. The impact of such lending on the volume of lending for telecommunications is significant but is not included in the Bank's statistics on telecommunications lending.

2. Telecommunication Loans and Financing Methods

Since 1962, the World Bank Group has been the source of almost \$2.4 billion in direct telecommunications loans and credits to 42 countries around the world. During that period, the volume of annual loans increased from \$2.9 million in 1962 to \$395.2 million in 1981. The loans have financed the foreign exchange requirement for urban, rural, local, long distance, and international telecommunication facilities, ranging from a minimum loan of \$0.8 million to Upper Volta in 1969, to the largest single loan, \$314.0

8. A list of IDA Credit Recipients is attached in Annex 5.

9. For example, a satellite earth station was provided to the Philippine Ministry of Education under an education loan to assist the government in improving administrative communications within the Ministry.

million, made to India in 1981. Of ten recently evaluated telecommunication projects, the foreign exchange component of the expansion has accounted for between 20 and 80 percent of the total investment required, and the internal financial rates of return are expected to range between 13 and 35 percent. Expected economic rates of return (i.e., overall returns to society) are even higher.

Despite its involvement in the telecommunications sector, the World Bank Group has traditionally played the role of lender of last resort, becoming directly involved in financing projects only when sufficient financing or technical assistance is not available from other sources, and when lack of investment or other obstacles are a significant hindrance to economic and social development. World Bank loans for this sector are usually based on an amortization period of 20 years, with a grace period of 3 to 5 years. Interest rates for World Bank loans are on a variable interest basis recalculated at six monthly intervals, and are presently set at .5 percent over the Bank's cost of borrowing in the international capital markets. The current interest rate is 11.43 percent.

IDA credits carry no interest charge and are subject only to an annual service charge of .75 percent of the loan's value over the 50-year repayment period. The IDA normally requires that funds for development of the telecommunications sector be re-lent by the borrowing government to the telecommunications administration on commercial terms that are not more favorable than those that would apply to a World Bank loan for telecommunications development.

The World Bank Group has made telecommunications loans to governments, and to public or private agencies and corporations, with government guarantees. No country has ever defaulted on a World Bank Group loan or credit.

World Bank loans and credits have, in recent years, been provided to finance "slices" of overall sector development. This means that the loan will cover a range of investment requirements in the telecommunications sector, including both urban and rural expansion requirements. All World Bank projects in telecommunications now include rural components, varying in size according to national priorities. For example, a recent IDA credit to Bangladesh included funds for expansion of rural telecommunications networks to ten zones using small- and medium-capacity multi-access VHF radio systems, as well as funds for the expansion of urban switching and inter-urban and international transmission systems.

Although World Bank loans and credits for telecommunication projects have averaged about \$28 million per project since 1962, the total cost of the average project is about \$108 million. Typically, therefore, the Bank finances between one-quarter and one-third of the total cost of the telecommunications projects it supports. In attempting to reduce the gap between available financing and total project cost, the World Bank Group has tried to encourage co-financing with other partners, including the private sector. With this end in view and in the light of possible cash-flow problems, the bank has agreed to adjust its amortization schedule for commercial banks to accommodate the usually early maturities of the private bank loans. As it is essentially interested in promoting development, the World Bank Group is not prepared to refinance existing debt.

3. Funding Criteria

The criteria used by the World Bank in considering financing a telecommunications project include the following:

- o The required funding is not available from other sources.
- o The loan will provide a level of investment that will help to attain broad national development goals and support individual development projects that depend on adequate communication infrastructure.
- o The loan will promote efficiency and social equity, such as the extension of services to rural areas.
- o The loan will promote rational institution building and policy improvements within the telecommunications sector.
- o The loan will promote rational long-term technical and financial planning and assist in achieving a least-cost solution to providing service.

In the case of supplying telephone access to remote and low-income groups, or providing emergency communication service, the basis for World Bank support may rest on social or humanitarian grounds, provided the economic rate of return is sufficiently high to indicate that the loan is not economically damaging to the borrower. It must be emphasized, however, that an economic rate of return may reflect the overall economic return to society, and does not necessarily indicate that the particular enterprise will be financially profitable.

4. Project Approval and Review Process

In the initial project identification phase, the World Bank and the member nation work closely in identifying projects that are consistent with national and sectoral objectives. The analyses provide the basis for a constant dialogue between the Bank and member countries as to which projects will bolster national and sectoral goals with costs that are likely to be commensurate with expected benefits. It is at this stage in the project cycle that individual projects become incorporated into the larger country program of lending for development. However, it is usually up to the government of the member country concerned to initiate a request for Bank Group lending in a particular sector, such as telecommunications.

Preparation of the loan documentation must cover the full range of technical, institutional, economic, and financial conditions necessary to achieve the project's objectives. Although the borrower is responsible for project preparation, the Bank may send sector review, project identification, and/or pre-appraisal missions to the country to assist and advise in project preparation.

All projects identified for possible World Bank Group financing undergo a comprehensive review process. A two- to four-week appraisal mission will

determine whether the technical, institutional, economic, and financial aspects of the project have been thoroughly evaluated, and whether the project is justified.

The appraisal mission's report is then considered by the Bank's Loan Committee. Subject to the committee's approval, the Bank then enters into negotiations with the representatives of the member Government and the borrower. During these negotiations the Bank and the borrower formalize their agreement on the parties' legal obligations, as specified in the loan documents, and on the details and timing of each of the specific actions necessary to implement the project.

Parallel to the development of the appraisal report, the Bank's staff prepares the President's report, which indicates how the proposed loan fits into the Bank's overall program for the country. The appraisal report, the President's report, and the legal documents are then submitted to the Bank's Executive Directors for approval.

Although the borrower is responsible for implementing the project, the Bank supervises the project through progress reports from the borrower and periodic field visits. Together with project preparation and appraisal, supervision is the Bank's primary opportunity for offering technical assistance to the projects it finances. Field missions make visits at intervals, depending on the complexity of the project, to assist in resolving any problems that may arise. The information gathered is also used to improve the design and preparation of future projects.

Supervision also includes verifying that the procurement of goods and services covered by the loan is carried out according to established guidelines. The Bank normally requires procurement through international competitive bidding open to qualified contractors in all of its member countries and Switzerland. The Bank requires the borrower to state the terms of the procurement clearly, to advertise it widely and well in advance of accepting bids, to use financial and technical standards that allow widespread tendering, and to compare the characteristics of alternative bids reasonably. Subject to prior notification and agreement, the Bank allows the borrower some domestic and regional preferences in awarding a contract. Occasional exceptions to international competitive bidding are allowed, as outlined in the Bank's procurement guidelines.¹⁰

A final project completion report reviews the project's physical achievements with relation to its targets, and reaches conclusions on the success of the project. All World Bank Group projects are subject to audit by the Bank's Operations Evaluation Department. The borrower is then asked to comment on the audit.

The stages outlined above are discussed in detail in a World Bank publication that identifies and delineates each phase of the project cycle.¹¹

10. World Bank, Guidelines for Procurement under World Bank Loans and IDA Credits. (Washington, D.C.: The World Bank, 1975).

11. Warren C. Baum, "The Project Cycle," Finance and Development, December 1978.

5. Conclusion

The International Telecommunication Union (ITU) has argued that the World Bank should offer significant resources in support of the telecommunications sector in developing countries. However, such support can come only through strong expressions of interest by borrowers. As noted in a recent ITU publication:

"If World Communications Year can induce a greater number of developing countries to take more interest in the telecommunication sector and to grant it high priority in their investment programs, the World Bank will certainly adopt a favorable approach to any request for funding."¹²

This is important to note, as it will be the borrowing nation's criteria that will largely determine the scope and extent of financing for rural telecommunications.

As is indicated by the number of references in this paper to World Bank studies and reports, the World Bank, in addition to its lending operations in the sector, has taken an active part in developing techniques for economic evaluation; rationalizing tariff policies and planning procedures; improving financial and administrative processes; and applying technology, forecasting methods, and plant utilization standards to the special conditions existing in the developing countries. In this connection, the Bank has produced a large number of working papers and staff notes, intended primarily for staff members, covering operational, economic, financial, and technical matters. Many of these reports have been made available on request to borrowers and outside interested parties. The Bank has also produced more than 30 telecommunications sector memoranda, which it has made available to the countries concerned, and has initiated and helped in carrying out telecommunications economics studies in a number of countries.

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B. THE INTER-AMERICAN DEVELOPMENT BANK

1. Description

The Inter-American Development Bank (IDB) is a multilateral financial institution established in 1959 to promote economic and social development in the Latin American countries. The IDB is particularly concerned with improving the quality of life of the lowest income groups in the region, through its lending activities in such areas as agriculture and fisheries,

12. "World Communications Year," Telecommunication Journal, Volume 49, Number 11, February 1982, p. 78.

energy, environmental and public health, education, science and technology, urban development, industry and mining, and transportation and communications. The membership of the IDB is composed of 27 nations in the Western Hemisphere, along with 16 nations from outside the region, for a composite membership of 43 countries. Although most of the borrowing countries are limited to the Western Hemisphere, the contributing countries include many of the major industrialized countries of the world.

The IDB is owned by the governments of its member countries, which are charged with overseeing its activities and policies. Similar to the World Bank, the IDB is a nonprofit development promotion agency. The IDB's resources are comprised of:

- o capital paid in by its member countries;
- o callable capital from the member countries (serving as a guarantee for IDB borrowings);
- o repayments on loans, which are an increasingly important component of the lending program;
- o a Fund for Special Operations, paid in by member countries, which is used to make concessionary loans; and
- o funds under administration.

In administering funds entrusted to it by various governments, the IDB has been able to extend its total lending resources significantly. As of 1980, the IDB administered trust funds for Venezuela, the United States, Canada, Switzerland, Norway, Sweden, the United Kingdom, and the Vatican.

In addition to the resources contributed by member countries, the IDB borrows funds from the sale of bonds in capital markets around the world. During 1980, the IDB borrowed a total of \$459.7 million, comprised of \$327.5 million in long-term borrowings and \$87.2 million in short-term borrowings, bringing total outstanding borrowing to the level of \$3,039 million as of the beginning of 1981.

Since its founding, the IDB has provided or organized financing for projects representing a total investment of over \$66 billion. Fifty percent of the current lending of its own resources is directed toward projects benefitting the lower income groups in Latin America. In 1980, the IDB made loans totalling \$2.3 billion, up slightly from just under \$2.1 billion in 1979. Hence, as of the beginning of 1981, cumulative IDB lending had reached almost \$18 billion. Of the 1980 lending program, \$1,424 million, or 62 percent, came from the IDB's capital resources; \$824 million, or 35 percent, from the Fund for Special Operations; and \$61 million, or 3 percent, from other funds which the IDB administers.

2. Telecommunication Loans and Financing Methods

In 1966, the IDB first began activities relevant to lending in telecommunications, in the sector it identifies as transportation and communications. At that time it produced a document, "Feasibility Study of

Space and Terrestrial Telecommunications in South America," which led to its first telecommunications loan in 1967. In 1975, CITEL (the Interamerican Telecommunications Committee of the Organization of American States) passed a resolution requesting that the IDB look favorably on applications for loans for rural telecommunications. This led to a 1976 decision by the IDB to accept a limited number of rural telephone projects for funding, starting with a rural telecommunications loan to Colombia.

From experience with projects financing the expansion of rural telecommunications in Colombia, Costa Rica, and Ecuador, the IDB began to favor the use of concessionary funds to finance rural telecommunications, because of the low financial return on investment, the relative poverty of the beneficiaries, and the high social benefit associated with improving conditions of the lowest income groups. The IDB justified the use of concessionary funds because of the similarity of telecommunications projects to other projects in agriculture, sanitation, health, and education, which can be justified on strictly humanitarian grounds, even if a positive financial rate of return is sometimes difficult to demonstrate. The IDB emphasizes, however, that a project's economic rate of return must be sufficient to assure that society is not suffering an economic loss through the investment.

In analyzing the need for rural telecommunication projects, the IDB tries to show a summary by sector of all development activities in the region under consideration in order to identify sectors that have been neglected or overemphasized. There will then be an attempt to increase the allocations for neglected sectors or to decrease the allocations for overemphasized sectors.

IDB loans for telecommunications infrastructure are generally provided to finance large complexes of facilities and equipment that perform mutually reinforcing functions: local urban systems, rural systems, national and international long-distance telephone systems, telex and data systems, and mass communication systems. (Commercial electronic mass communications are excluded from IDB funding consideration.)

Among the rural telecommunications projects the IDB has financed are a \$13.7 million loan to Panama in 1979 to finance the construction of 32 telephone exchanges, 28 line concentrators, and 210 public telephones in rural communities; a \$12.2 million loan to Costa Rica in 1977 to finance the construction of 56 telephone exchanges and 1,300 public telephones in rural areas; and, most recently, an \$18 million loan to Guatemala to finance the installation of 7,600 telephones in rural areas. Rural projects have also been funded in Colombia and Ecuador.

In addition to the telecommunication development projects that it finances, the IDB provides funds for the preparation of long-term plans, feasibility studies, and detailed project planning, as well as for improving operational organization and training, selection of personnel, and financial management, including accounting, rate studies, and collection systems. The IDB will also make funds available to assist the rationalization of telecommunication activities, placing emphasis on the regulation and integration of operating establishments. In addition, financing can be provided for analyzing the consistency of telecommunication activities within overall development plans. The IDB is able to include retroactive financing in its lending program to cover investments in studies and designs made prior

to the signing of a contract.

The IDB provides essentially two types of loans. The first are "soft" loans, with very advantageous interest rates. Offered to the poorest borrowing states, soft loans are provided at 2 percent interest with a ten-year grace period, during which 1 percent interest is charged per year, followed by a 30-year repayment period at 2 percent, plus .5 percent per year on the undisbursed components of the loan. This loan requires a two-thirds vote of the IDB membership for approval. As a result, such loans are subject to political review by the member states.

The conventional loans offered by the IDB are offered at 10.5 percent interest per year, with a four- to five-year grace period during construction. One and one-quarter percent interest is charged annually on undisbursed parts of the loan. Interest incurred during the construction period is included in the loan. These loans are flexible in length, but are generally for about 15 years.

Unlike the World Bank, there is apparently little IDB lending for telecommunications equipment outside of the telecommunications sector. This difference is due to the far smaller size of the IDB, so that virtually all telecommunications lending is reviewed within the telecommunications department.

IDB funds are generally used to pay the foreign exchange costs of imported equipment and materials. Only rarely are they used for payment of local currency expenses. As with the World Bank, IDB loans generally cover only a portion of a project's total costs, with the remaining funds coming from other multilateral banks, private lenders, and local sources (e.g., retained earnings, government subscriptions of capital, local investors). Through 1980, IDB's cumulative loans for telecommunications totaled \$220 million, representing 1.4 percent of total cumulative loans.

3. Funding Criteria

In order to be eligible for IDB financing, a telecommunications project must:

- o be development-oriented;
- o conform to long-term telecommunication system planning criteria, including the pursuit of technical and institutional solutions that will provide for optimum scale and use of the system and will contribute to the improvement of operating capabilities. Such activities should include the strengthening and rationalization of the telecommunications administrations;
- o be undertaken by an enterprise that possesses engineering, planning, and financial planning capabilities; procurement capability; capable personnel; and training facilities;
- o expedite economic transactions and productive activities, enable effective movement of goods and services, and contribute to the integration of economic activities and efficient utilization of

production factors and resources; and

- o contribute to overcoming marginal living conditions and geographic and social isolation.

In the case of rural telecommunications, the IDB has raised some major concerns that have shaped its loan criteria. These are worth noting here:

Although recognizing the importance of rural telecommunications within the context of a country's development, a basic consideration for the Bank is that financing this field of activity represents an additional demand on its limited resources. This in turn would imply a reduction in the amount of resources available for other fields of activity, especially in other sectors related to rural development to which both the Bank and member countries have traditionally attached a high relative priority, including projects directly aimed at increasing farm production, as well as important rural infrastructure such as irrigation, feeder roads, water supply, health services, rural schools, etc. For that reason the Bank will be selective in considering applications for technical cooperation and loans to support rural telecommunications systems and will only consider such operations when it can be shown that the project meets the following special criteria, in addition to those general evaluation criteria listed in the following section:

The project should be consistent with and complementary to other current activities for rural development in the region concerned and accordingly constitute an element of support in the regional development plans; and

Regarding the socioeconomic justification, the project should:

- o constitute the lowest cost effective solution;
- o be limited to the establishment of a minimum telecommunications system (skeleton system) linking isolated areas and centers of consumption and the rendering of services;
- o be limited, within the service areas, to meeting the needs of the productive sectors and essential public services; and
- o exclude residential or household service, except for the installation of a small number of telecommunication

facilities to be operated as "public telephones" for common use by the rural community at large.¹³

In addition to the above criteria, a project must generate an adequate rate of return, must consider IDB's rules regarding the design of economically efficient tariffs, and should conform to accepted technical standards such as those established by CCITT and CCIR.

4. Project Approval and Review Process

A loan from the IDB goes through the following process:

- a. The national telecommunications agency identifies project and loan requirements to its national planning agency.
- b. The national planning agency includes the project within its list of projects proposed for IDB, and discusses it with IDB during annual review meetings.
- c. The IDB and national planning agency establish priorities for the package of projects over a three-year period.
- d. If included in the package, the telecommunications agency makes a formal loan request through the national planning agency to the IDB.
- e. A team from the telecommunications agency visits the IDB to review the application information requirements.
- f. A feasibility study is submitted to the IDB with the formal loan request.
- g. The IDB sends an analysis team to the country to assess the loan. The study reviews sector plans, finances, the role of the project in national development priorities, and its effect on development. A project report is prepared for the final review cycle.
- h. The project report is reviewed by the Middle Management Committee.
- i. The loan is sent to the Loan Committee and then to the Bank's Board of Directors. It is first reviewed by the Committee of the Whole and then goes to the entire Board for final review. The overall process can take as little as one year and as long as three to four years, depending on the project's priority.

5. Conclusion

Overall, it appears that the IDB will make investments in rural

13. Inter-American Development Bank, Operational Policies Manual: Economic Infrastructure Sectors, Telecommunications (Washington, D.C.: Inter-American Development Bank, June 1977), pp. 5-6.

telecommunications, provided the proposed projects meet its basic funding criteria. The fact that telecommunications represents only 1.4 percent of IDB's cumulative loans through 1980 would seem to reflect a low level of interest in such loans by both the borrowers and the IDB. Nevertheless, the IDB's policy is to favor projects that support the lower income groups, and rural telecommunication projects tend to be well justified on those grounds. Given the IDB's policy of gearing its lending activities to rural sectors that have been relatively neglected in the past, the prospect for future lending for rural telecommunications projects is not as discouraging as the statistics of past lending volume might suggest.

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C. OTHER MULTILATERAL BANKS

There are a number of other multilateral banks, such as the Asian Development Bank, the Arab Bank for Economic Development in Africa, and the African Development Bank, which can be used for financing telecommunications investments. However, the involvement of these banks with the telecommunications sector has been relatively minor and largely oriented toward urban and trunk systems. The Asian Development Bank, for example, has financed some large telecommunications projects in the past, and during 1982 provided \$40 million to help finance a telecommunications development program in Pakistan. However, the Asian Development Bank has no telecommunications division and takes telecommunications projects only on an ad hoc basis. Given the lack of Bank staff in telecommunications, there is little encouragement for such projects, and few telecommunications projects are brought to it for funding.

The Arab Bank for Economic Development in Africa (BADEA), a financial institution established to strengthen economic, financial, and technical cooperation between the African and Arab countries, has had some involvement in the telecommunications sector. It has provided loans for pre-investment studies relating to links in the PANAFTEL network, and has expressed interest in funding telecommunications projects linked to development. As with the multilateral banks, its program is established around the development programs of the recipient countries, which have generally not included strong telecommunications programs. It has financed only one telecommunications project. BADEA has also contributed to technical assistance in telecommunications. As of the end of 1980, BADEA had invested \$6.1 million in telecommunications, out of a total commitment of \$383.63 million.

The African Development Bank has made some small loans for rural telecommunications, but has generally emphasized urban systems and trunk systems associated with the PANAFTEL network.

It is unlikely that there will be any significant increase in rural telecommunications activities among the other multilateral banks until the

banks' development staffs recognize that rural telecommunications is an essential component of development infrastructure, and until borrowers are encouraged to draw upon these banks' resources to expand rural telecommunication systems.

D. THE EXPORT-IMPORT BANK OF THE UNITED STATES

1. Description

The Export-Import Bank of the United States (Eximbank) is the primary recourse for U.S. exporters who must compete for foreign contracts against firms whose governments authorize official financing packages to make exports more attractive. Eximbank's goal, as mandated by the U.S. Congress, is to match the export credit packages of foreign governments so that international contracts will be awarded on the basis of exporters' own competitiveness, rather than on the competitiveness of government-supported export credits and other financial packages.

The Export-Import Bank Act of 1945 also directs Eximbank to "seek to reach international agreements to reduce government subsidized export financing." One outcome of this mandate was the 1976 International Arrangement on Officially Supported Export Credits, which is presently being renegotiated. This arrangement establishes the minimum interest rates that can be charged for a loan, as well as the maximum allowable repayment period. The negotiated guidelines remain soft compared to the terms available in private financial markets, and they do not affect financial packages that mix export credits with concessionary foreign aid. Thus, Eximbank continues to be an important source for promoting U.S. exports.

Eximbank offers two separate programs for long-term lending support: Direct Credits, and Financial Guarantees and Insurance. Direct Credits are long-term loans extended to foreign purchasers of U.S. exports. The program of Financial Guarantees and Insurance extends official assurances to private lending institutions that Eximbank will repay any defaulted loans made to the foreign entity. The Guarantee and Insurance program is usually limited to the purchase of small items.

Of the four short- and medium-term Eximbank programs, the most interesting in terms of financing rural telecommunications is the Cooperative Financing Facility (CFF). The CFF provides U.S. dollar lines of credit to foreign financial institutions, which may disperse that credit as they see fit, provided that 50 percent of each loan goes to purchase U.S. goods and services. Other short- and medium-term support programs take the form of insurance coverage for U.S. exporters and repayment guarantees for U.S. banks.

According to Eximbank's Fiscal 1980 Annual Report, authorizations under the Direct Credit program have increased by 478 percent in all sectors, from a value of \$700 million in fiscal year 1977 to \$4.045 billion in fiscal year 1980. The typical Direct Credit financing package includes a cash payment of 15 percent of the export contract and an Eximbank loan of either 42.5 or 65 percent. That leaves at least 20 percent of the total project value that must be financed by the commercial market or by another financial resource. Although the interest rate and repayment period on these loans have traditionally been somewhat flexible in matching the terms of foreign

financial packages, the current interest rate of 12 percent and the eight-year term of the loan have been in force since November 1981.

In other Eximbank programs, long-term Financial Guarantees and Insurance approached \$2 billion in lending in 1980. The Private Export Funding Corporation, which provides private financing under Eximbank's guarantee, recently undertook \$1.5 billion in newly committed loans. During 1980, Eximbank approved \$41.7 million in CFF loans, with repayment terms not exceeding five years.

As a self-sustaining financial institution, Eximbank must generate the money it lends by borrowing from the U.S. Treasury and the Federal Financing Bank (FFB), and by re-investing revenues generated by the interest and fees charged to its users. Although Eximbank must pay interest on the money it borrows, it secures these loans at better terms than prevail in commercial lending markets. The annual interest rate of 12 percent currently offered on Direct Credits represents a stiffening of terms from the 10.75 percent rate that applied as of July 1981 and the 8.75 percent rate that applied previously. With an interest rate of 12 percent, the high cost of borrowing funds in today's market is preparing Eximbank to report a loss in earnings for the first time in its 48-year history.

2. Telecommunication Loans and Financing Methods

The above figures reflect Eximbank's overall financial activities, including the sectors of agriculture, communication, construction, electric power, manufacturing and refining, transportation, and a miscellaneous category.

From a share of 7.5 percent of all exports supported in 1973, the communication sector has generally shown a steady decline to a 3.7 percent share in 1982. However, the Bank has made a series of substantial credits and guarantees in telecommunications. During fiscal year 1980 Direct Credits of \$97.5 million were provided to support the sale of two communication satellites and related services to Indonesia, as well as \$130 million to support Korea's \$200 million telecommunications expansion.

During late 1982 and early 1983, the Eximbank became involved in two major telecommunication satellite projects, in Mexico and Brazil. For the proposed Mexican satellite, the Eximbank agreed to guarantee 85 percent of a \$150 million loan for the system, which is being syndicated by Citibank. This loan will cover all U.S.-based costs of the launch, the satellite, payload assist modules, insurance premiums, and engineering consulting services. The total term of the loan is ten years, with repayment commencing six months after the launch of the second satellite, in 20 semi-annual payments.

Eximbank has also agreed to provide credits directly to the Brazilian government for the U.S.-based costs of Brazil's new satellite system. The Brazilian system is a joint venture between Spar Aerospace (a Canadian company) and Hughes Aircraft. Hughes will be providing the satellite bus, for a total value of \$42.5 million. Eximbank will finance \$27.6 million of this amount at 12 percent interest. As with the Mexican loan, the loan will be for ten years, with repayment starting six months after the launch of the second satellite.

Discussion with the Eximbank suggests it is unlikely that there will be continued increases in the communication sector. Individual projects funded in the communication sector range from \$2 million to \$100 million, typically requiring up to ten years to finance.

The Eximbank examines loans on an individual basis and lacks any sectoral or industry-wide criteria for judging a loan. Loans are based on a judgment of how a loan will help a U.S. company obtain an export contract, rather than on any particular commitment to a sector.¹⁴

3. Funding Criteria

Eximbank's criteria for financing rural telecommunications are the same as those that apply to its authorizations in general:

- o The exporter or foreign buyer must submit proof of competition.
- o The equipment or service cannot be purchased for military purposes.
- o Eximbank may require that the country enlist an acceptable consulting firm to recommend the most feasible and cost-effective method of interfacing the new equipment with existing technology. Eximbank, however, will not insist that the country adopt the consulting firm's final recommendations.
- o Under the Direct Credit program, which generally deals with projects exceeding \$5 million, the credits must be used to purchase U.S. supplies and equipment. Items of lesser value are usually supported through the Financial Guarantee program.
- o Approval will depend on Eximbank's liability, the political impact of the purchase, and the nature of the goods or services to be bought.

"The review process may also include submitting the transaction to an interagency body, the National Advisory Council on International Monetary and Financial Policies (NAC), for comment. The NAC is made up of representatives from the Departments of State, Treasury, and Commerce, the Federal Reserve Board, and Eximbank. For very large transactions,

14. For a more detailed discussion, see Robin Day Glenn, Financing of United States Exports of Telecommunications Equipment (Washington, D.C.: The International Law Institute, Georgetown University Law Center, 1982).

those having an Eximbank liability of more than \$100 million, ... the review process includes submitting the request to Congress".¹⁵

- o The terms offered will normally depend on the nature of the transaction, the credit-worthiness of the borrower, and conditions in the U.S. money market.
- o Direct Credits (or other credits) are not in Eximbank's supervising or overseeing the fore. tied to inst.

4. Project Approval and Review Process

Eximbank plays a relatively passive role, acting only on request from U.S. exporters or potential overseas buyers to assist them in competing for contracts against foreign suppliers with official credit support.

Following such a request, Eximbank will request information on the borrower and the items to be purchased, as well as information about competing official foreign financial support. In collecting information on official foreign export credits, Eximbank will make use of the International Arrangement on Officially Supported Export Credits, which establishes guidelines for the exchange of information on official financing among its signatories. The U.S. exporter, or the potential buyer, should request a "Preliminary Commitment" from Eximbank, which outlines the terms of Direct Credit and Financial Guarantee authorizations that Eximbank is prepared to offer.

If, in the early stages of a sales negotiation, an exporter needs a statement on Eximbank's position but is unable to submit sufficient information for a Preliminary Commitment, Eximbank may issue a Letter of Interest outlining its probable attitude.

Next, the potential buyer decides whether the terms of the Preliminary Commitment are acceptable, and, if so, will submit a final loan application to Eximbank. A number of specialists will be responsible for reviewing the loan application (loan officer, economist, attorney) and will present the Export-Import Bank Board of Directors with a memorandum. Once the loan application receives final approval by the Board, the Preliminary Commitment is converted into a Direct Credit loan. The Eximbank will not supervise or oversee a project once the actual authorization has been made.

5. Conclusion

Record high interest rates from U.S. financial institutions, coupled with an increasing demand for Eximbank support, have forced Eximbank to reevaluate some aspects of its financial packaging. The recent rise in its

15. Nancy L. Wolf and David B. Hobbs, Trade Issues in Telecommunications and Information: The Role of the United States Government in the Financing of Exports of Major Telecommunications and Information Products (Washington, D.C.: U.S. Department of Commerce, NTIA Report 81-72 June 1981), footnote 22, p. 24.

interest rate to 12 percent was one strategy to combat the tight money situation.

Eximbank is now examining better ways to compete with foreign "mixed credits," where financing is combined with outright foreign aid. Although the Bank has occasionally committed its own capital and reserves toward matching the mixed credit offered by foreign governments, it has been suggested that the U.S. establish a formal mechanism and authority for offering similarly coordinated assistance programs. For example, Eximbank and the U.S. Agency for International Development have cooperated in the past to offer parallel financing for four power generators purchased by Egypt.

Eximbank is trying to get away from subsidies in support of its policy of freeing up markets. The 1976 International Arrangement is being renegotiated at present, with part of the discussion focusing on mechanisms to reduce or eliminate subsidized exports. In the meantime, it is expected that Eximbank will continue to increase its participation by sharing the financing of U.S. exports with private institutions in order to provide the competitive financial packages that have been mandated by the U.S. Congress.

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Medium the low % of GDP invested in telecom.

Chapter Four

SUMMARY AND CONCLUSIONS

There has been serious under-investment in telecommunication facilities in the developing world, as evidenced in many countries by the low investment in GDP per capita, low telephone penetration, large waiting lists, and poor quality of service. The economic and social cost of inadequate service is demonstrably high. Telecommunications administrations are hampered by the inability to take full advantage of possible economies of scale, and are further weakened when major enterprises develop private networks in the absence of adequate public facilities.

Lacking the ability to meet all demands adequately, telecommunications administrations have tended to concentrate on the development of urban service areas, characterized by least cost and maximum profitability, where, from a political point of view, the more important and articulate telecommunication users are located. Rural areas, therefore, have been substantially neglected. Given the backlog in meeting demand, pressure to concentrate on urban development is not likely to diminish.

Failure to develop facilities adequately has generally resulted from limitations on financial (and to a lesser extent, physical) resources. Given an adequate tariff structure and reasonable efficiency in operations, telecommunication administrations have shown an ability to generate funds in excess of those required for the local cost of their development programs. They should, therefore, be able to undertake some cross-subsidization of the local cost of rural development and thus achieve more balanced development of their networks. The major restrictive factor in the development of facilities, particularly in rural areas, has been the absence of adequate foreign exchange financing in a sector which is capital intensive and has to import high-technology equipment. With adequate training facilities available in most areas, the physical resource limitation is likely to be short term.

National planning agencies and telecommunications administrations are more and more aware of the advantages to all users of expanding the community of interest into new areas, and of the advantages in terms of improved economic efficiency and social equity that can be achieved with better rural communications. In view of prevailing social and political pressures and the need to maintain financial viability in the sector, it is important that the basis for balanced development programs serving all parts of the society be fully understood by all concerned parties. The long-term solution appears to be the adoption of levels of expansion that will fully meet demand as a whole.

Such a solution is likely to require the allocation of a higher proportion of the foreign exchange resources available to the country for telecommunications development. If high levels of rural development are contemplated, there may also be a need (probably only over the shorter term) for some subsidization, possibly through special financing.

There are three major routes used by telecommunications agencies for obtaining foreign exchange for new investment -- supplier credits, multilateral lending, and bilateral lending. The use of supplier credits is probably the most common form of borrowing and can be the most expensive if it

is entirely from private lenders. The advantage of such borrowing is that it is relatively quick to arrange. Supplier credit lending is not tied to particular types of programs, but to the overall creditworthiness of the government or the company doing the borrowing. The major disadvantages of such borrowing are that the period of the loan is generally much shorter than the amortization period of the equipment, thus often causing financial strains on the borrower, and the borrower may make decisions about equipment based on the financial package offered by the equipment vendor, rather than on decisions about engineering or economic optimality.

Among multilateral lending agencies, only the World Bank has a substantial lending program for telecommunications and has expressed continuing interest in financing rural telecommunications projects per se. The Inter-American Development Bank has provided financing for rural telecommunications projects, but at a substantially lower level than the World Bank. In both cases, lending is limited by both the willingness of borrowing states to request loans for telecommunications, and by the banks' priorities, which rank telecommunications in general as less important than other development sectors. Both banks provide subsidized low interest loans for states with borrowing impediments, and loans at a favorable rate approximating the international cost of capital. The capital supplied from these banks is of particular importance for countries that might have difficulty borrowing for reasons relating to the country's general creditworthiness, and for reasons particular to the project.

For example, the requirement for equipment from many different producers makes supplier credits a difficult, and possibly very costly, means of financing the foreign exchange components of a project, or the low probable financial return of a rural project will require low financing costs to make the project worthwhile. While the multilateral banks tend to place more conditions on telecommunications loans than do private banks, relating to efforts to assure the overall financial soundness of the telecommunications sector, such conditions may help assure that important policy issues relating to the efficient expansion of the rural telecommunications sector are addressed early in a development program.

The Export-Import Bank of the United States provides funds on a bilateral basis to countries for telecommunications loans at the generally prevailing international cost of capital. These loans are not tied to any particular project component, and the Eximbank has no particular interest in rural telecommunications as a field of lending. Eximbank is also a "passive" lender, in that it rarely imposes the types of institutional reviews and modifications often required by the multilateral banks -- loans are guaranteed by the government, and not necessarily by a particular ministry or sector.

The ultimate choice as to the appropriate agency for financing the foreign exchange component of a rural telecommunications project will depend on the country's overall telecommunications expansion strategy, availability of capital from private banks or suppliers, and ability to pay international, as opposed to subsidized, interest rates. The decision to undertake major rural telecommunications expansion is obviously a complex one, tied not only to the availability of capital, but to the overall ability of the sector to assure that the rural telecommunications expansion is financially sound and contributes to overall national development.

Annex 1

ANALYSIS OF TELEPHONES IN PRINCIPAL CITIES AS AGAINST THE REST OF THE COUNTRY

| Country | Developed Countries | | Developing Countries | |
|----------------|--------------------------------------|--------------------|----------------------|--|
| | % of population in main cities | % of telephones | Country | % of population in main cities % of telephones |
| USA | 48.9 | 51.9 | Venezuela | 39.5 75.5 |
| Canada | 40.0 | 49.6 | Upper Volta | 7.3 97.6 |
| Germany | 27.4 | 39.5 | Indonesia | 11.0 70.4 |
| United Kingdom | 31.3 | 40.1 | Chad | 10.8 40.2 |
| France | 31.4 | 53.9 | Kenya | 9.8 78.9 |
| Italy | 37.8 | 50.0 | Malaysia | 10.2 58.6 |
| Japan | 52.6 | 59.5 | Pakistan | 14.7 68.7 |
| Australia | 68.6 | 77.3 | Thailand | 14.8 82.8 |
| Switzerland | 34.9 | 45.9 | India | 6.8 55.0 |
| Sweden | 36.0 | 43.1 | Fiji | 1.4 46.9 |
| Belgium | 41.9 | 56.2 | Costa Rica | 43.1 85.2 |
| Spain | 26.6 | 47.3 | Papua/NG | 8.8 85.7 |
| Averages | 39.8 | 51.2 | | 14.9 70.4 |

Note 1. The figures are taken from The World's Telephones, August 1980 edition.

Note 2. Population figures for Germany were based on gassated figures, as those in The World's Telephones were obviously in error.

Note 3. The same countries were selected as those for Table 1 but with the following exceptions:

- a) Indonesia was substituted for Burma, as figures were not available for the latter.
- b) Papua New Guinea was substituted for Singapore in view of the totally urban nature of the latter network.

TELECOMMUNICATION INVESTMENT POLICIES IN THE UNITED STATES

As one of the few nations without a public telecommunications administration, it has been a major challenge for the United States to provide telephone service to rural users. The U.S. decided early in its telecommunications history not to provide public subsidies to telephone service. At the same time, the U.S. had historically supported universal postal delivery, at enormous public expense, on the grounds that universal communication was necessary for national economic development and for fostering democracy.

With the private development of telephony, it was clear by the 1930s that the rural sector had received little investment. Two decisions were made, one quasi-private and one public, which dramatically changed the availability of rural telecommunications. The first was the decision of the telephone industry, with considerable prodding from state and federal governments, to develop a system for dividing toll revenues among jurisdictions. The second was the development of the telephone sector of the Rural Electrification Administration (REA).

The development of a means for dividing revenues among regulatory jurisdictions related directly to the problem of having a telephone network where long distance carriage was provided by AT&T, and exchange service often provided by other telephone companies.¹ The system that has evolved over the past one hundred years, and that is now undergoing major changes, has basically created a mechanism for pooling all telephone revenues and costs. Without going into enormous detail about this process, it is sufficient to say that all of the exchange and toll companies developed a process, with government participation, that allows each company's revenues to be placed into a pool.² While exchange tariffs vary from place to place, depending on cost of service and the amount of plant charged to exchange or toll services, the tariffs for toll are standard within each state, and between states. Each company is then compensated for its cost of service, based on a complicated formula that weighs the division of plant use among local, intrastate, and interstate services, and political considerations, with the revenue from this

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1. The United States has an often confusing system of dividing regulation over telecommunications. The federal government controls all aspects of telecommunications crossing state lines, while the state governments regulate all intra-state communications, including exchange service. However, given that the same plant is used for both interstate and intrastate communications, federal decisions, which under U.S. law are determinate in areas of conflicting jurisdiction, determine many of the intrastate practices. Nevertheless, there are basically three sets of tariffs--the exchange and intrastate toll tariffs, which are regulated by the states, and interstate tariffs, which are regulated by the federal government.
 2. The reader interested in the intricacies of the old method of pooling and dividing revenues is referred to Richard Gable, Separations in the Telephone Industry (East Lansing, Michigan: Michigan State University, 1967).

pool. As a result, each company receives sufficient revenues to cover its operating and capital costs, including sufficient profits to continue capitalization. Any shortfall in revenue, relative to costs, is met through local exchange rates.

However, there has been continuing national policy to keep local exchange rates, which include the basic cost of telephone service, to a "reasonable and affordable" level. It is possible under this system for a small rural telephone company, which has little exchange use but a fairly substantial amount of toll (fairly common with small communities), to receive more revenue from the overall "pool" than it actually puts in. Thus, the telephone industry itself maintains a mechanism for subsidizing companies so that they are able to continue to invest in expansion and modernization.

The second critical aspect of the rural system in the U.S. has been the provision of low interest loans from the Rural Electrification Administration. These loans have been made available to rural telephone cooperatives and rural exchanges, and have helped many companies whose revenues were insufficient to warrant borrowing at commercial rates, or where commercial loans would have been difficult to acquire. Thus, the closest the U.S. has come to direct subsidization of telephone service has been through subsidized loans, allowing the private sector to organize the actual subsidization of the individual rural companies.

Annex 3

TELECOMMUNICATIONS INVESTMENT DATA

All monetary figures are annual averages over the development program period and are in US\$ Million

| Country | Annual Telcoms Investment | Foreign Currency Costs | Amounts Financed from Self-generated Funds | | Amounts Financed from External Sources | | Equity contribution from Govt | Taxes Duties Dividends Contributions paid to Govt | Net Contribution to Govt | |
|----------------------------|---------------------------|------------------------|--|---------------------------------|--|---------------------------------|-------------------------------|---|--------------------------|---------------------------------|
| | | | Amount | Percentage of Annual Investment | Amounts | Percentage of Annual Investment | | | Amount | Percentage of Annual Investment |
| Fiji | 4.8 | 3.1 | 2.2 | 45.8 | 2.6 | 54.2 | - | 0.4 | 0.4 | 8.3 |
| Costa Rica | 32.6 | 10.9 | 20.8 | 63.8 | 11.8 | 36.2 | - | 7.9 | 7.9 | 26.2 |
| Colombia | 57.7 | 37.1 | 44.2 | 76.6 | 13.5 | 23.4 | - | 11.8 | 11.8 | 20.5 |
| Guatemala | 11.5 | 8.1 | 7.0 | 60.9 | 4.5 | 39.1 | - | 1.3 | 1.3 | 11.3 |
| Zambia | 18.2 | 11.6 | 5.5 | 30.2 | 12.7 | 69.8 | - | 2.8 | 2.8 | 15.4 |
| Thailand | 145.3 | 74.5 | 52.1 | 35.9 | 93.2 | 64.1 | - | 37.5 | 37.5 | 25.8 |
| Pakistan | 34.5 | 17.8 | 15.5 | 44.9 | 19.0 | 55.1 | - | 14.3 | 14.3 | 41.4 |
| India | 334.3 | 89.7 | 139.7 | 41.8 | 194.6 | 58.2 | 66.0 | 163.4 | 97.4 | 29.1 |
| Burma | 10.0 | 6.8 | 1.4 | 14.0 | 8.6 | 86.0 | - | 1.6 | 1.6 | 16.0 |
| Nepal | 8.2 | 4.6 | 2.3 | 28.1 | 5.9 | 71.9 | - | 0.2 | 0.2 | 2.4 |
| Ethiopia | 12.1 | 7.8 | 6.0 | 49.6 | 6.1 | 50.4 | - | 3.4 | 3.4 | 28.1 |
| Niger | 5.0 | 4.1 | 0.8 | 16.0 | 4.2 | 84.0 | 0.3 | 0.9 | 0.6 | 12.0 |
| Average Percentage Figures | | | | 42.3 | | 57.7 | | | | 19.8 |

Annex 4

SELECT LIST OF WORLD BANK PUBLICATIONS ON TELECOMMUNICATIONS

Telecommunications Pricing and Investment in Developing Countries,
P.U. Report No. PUN 30, July 1977.

Evaluation of Telephone Projects in Less Developed Countries,
P.U. Report No. PUN 37, July 1978.

Telecommunications Sector Appraisal Handbook, P.U. Report No. GAS 15, July
1978.

Telecommunications: Priority Needs for Economic Development,
P.U. Report No. PUN 45A, June 1979.

Telecommunications in Developing Countries: The Relation to the Economy and
Society, P.U. Report No. PUN 32B, October 1978.

Financing of Telecommunication Expansion, P.U. Report No. PUN 48, September
1979.

Telecommunications in Developing Countries: Constraints on Development,
Report No. TWT-N-1, July 1980.

Practical Aspects of Telecommunication Investment and Pricing, Report No.
TWT-N-2, November 1980

COUNTRIES RECEIVING IDA ASSISTANCE DURING FY 1981**Eastern Africa:**

Burundi
Ethiopia
Kenya
Lesotho
Madagascar
Malawi
Rwanda
Somalia
Sudan
Tanzania
Uganda
Zaire
Zimbabwe

Western Africa:

Benin
Cameroon
Central African Republic
Ghana
Guinea
Guinea-Bissau
Liberia
Mali
Mauritania
Niger
Senegal
Sierra Leone
Togo
Upper Volta

East Asia and Pacific:

People's Republic of China
Papua New Guinea
Solomon Islands
Western Samoa

South Asia:

Bangladesh
Burma
India
Nepal
Pakistan
Sri Lanka

Middle East:

Egypt
Yemen Arab Republic
Yemen, People's Democratic Republic

Latin America and the Caribbean:

Ecuador
Haiti
Nicaragua

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INTER-AMERICAN DEVELOPMENT BANK PUBLICATIONS

Guidelines for the Preparation of Loan Applications: Telecommunications, July 1979.

Operational Policies Manual: Economic Infrastructure Sectors/Telecommunications, 1977.

WORLD BANK PUBLICATIONS

Evaluation of Telephone Projects in Less Developed Countries, P.U. Report No. PUN 37, July 1978.

Financing of Telecommunication Expansion, P.U. Report No. PUN 48, September 1979.

Guidelines for Procurement Under World Bank Loans and IDA Credits, 1975.

Practical Aspects of Telecommunication Investment and Pricing, Report No
TWT-N-2, November 1980

Telecommunications in Developing Countries: Constraints on Development,
Report No. TWT-N-1, July 1980.

Telecommunications in Developing Countries: The Relation to the Economy and
Society, P.U. Report No. PUN 32B, October 1978.

Telecommunications Pricing and Investment in Developing Countries.
P.U. Report No. PUN 30, July 1977.

Telecommunications: Priority Needs for Economic Development,
P.U. Report No. PUN 45A, June 1979.

Telecommunications Sector Appraisal Handbook, P.U. Report No. GAS 15, July
1978.

SUBJECT: Policy Study #2: Sources of Telecommunications
Funding and Technical Assistance for Developing Countries

The purpose of this study is to determine what financial and technical resources in telecommunications are available to developing countries, and what criteria are used in providing these resources. The primary emphasis will be on major multilateral funding agencies. However, multilateral sources of technical assistance will also be included.

The outcome of the study will be useful in helping project countries identify potential funding sources for operational systems, providing information to other developing countries with similar requirements for rural services, and in identifying for AID what information about the rural satellite project and/or other data will be useful to these agencies in re-evaluating their funding policies.

Particular attention will be paid to criteria for funding satellite projects, or any special concerns funding agencies would have in considering satellite projects for funding. The agencies to be studied include:

Multilateral Funding Agencies

The Development Banks:

World Bank
Asian Development Bank
Inter-American Bank
African Development Bank
Arab Development Bank

Export-Import Bank

European Economic Community (of which many African, Caribbean, and Pacific countries are associate members under the Lomé Convention)

International agencies which provide technical assistance:

UNDP

ITU

INTELSAT

Methodology will include written requests for information to the agencies involved plus personal interviews with key agencies, particularly the development banks and EEC. Primarily, emphasis will be on institutions that could be approached for funding by project countries. Data on past telecommunication loans to developing countries and the extent of their rural components will be collected and analyzed.

The study will use consultants with solid financial backgrounds to ensure viability of recommendations vis-a-vis financial institutions.

The study as originally proposed was limited to these topics. However, the study could be expanded to include other funding sources that are available to project countries based on experience of other LDCs. The development banks are lending agencies of "last resort." In the telecommunications field, LDCs have often been able to find funding through other sources; e.g. commercial banks, equipment suppliers, and bilateral agencies. To paint a complete picture of options, these institutions and their funding criteria would need to be included. However, the scope of the study would be significantly expanded and more time and effort would be required to obtain information.

An alternative to attempting to cover all the funding sources available to LDCs for telecommunications would be to examine what sources have been used for satellite facilities. For example, a sample of LDCs with domestic INTELSAT systems could be examined to determine what the source of their funding and financing criteria were.

This may be a reasonably straight-forward task if equipment suppliers such as Scientific Atlanta, Harris, and California Microwave are willing to discuss the financing for the domestic systems they have supplied to LDCs. It should also be possible to get good information from the Export-Import Bank on loans they have arranged for purchase of INTELSAT A and B stations from American suppliers. This information may be more difficult to obtain from countries

that have purchased equipment from European, British, or Japanese suppliers.

Concerning bilateral agencies, it would be necessary to draw up a fairly limited list of countries that fund telecommunications projects in LDCs. Again, it is difficult to predict how much information would be available through local sources such as embassies, and how long it would take to acquire from the countries themselves.

Two options therefore proposed for expanding the study:

1. Identify a subset of LDCs with domestic INTELSAT systems and attempt to determine the source of their funding and financing terms.
2. Add an additional set of institutions such as major bilateral agencies (from Canada, Japan, France, Germany, etc.) and/or set of prominent financial institutions and equipment suppliers to the list of institutions to be studied.

It will be difficult to estimate the additional time required for these options without some trial letters and phone calls to find out how much of this information is readily available.