RESULTS ON THE GROUND

THE PRIVATE SECTOR AND DEVELOPMENT: FIVE CASE STUDIES

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Argentina
Madagascar
Bolivia
Benin
Indonesia
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INTERNATIONAL FINANCE CORPORATION
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Acronyms

AQUALMA  
Aquaculture de Mahajamba
BISA  
Banco Industrial, Sociedad Anonima
BOA-CI  
Bank of Africa-Cote d’Ivoire
BOAB  
Bank of Africa Benin
BOAD  
Bank Ouest-Africaine de Developpement
CAF  
Corporacion Andina de Fomento
CFA  
African Financial Community
COFACE  
Compagnie Francaise d’Assurance pour le Commerce Extérieur
DFC  
Development Finance Company
EIB  
European Investment Bank
ESAF  
Enhanced Structural Adjustment Facility
FAO  
Food and Agriculture Organization
FMO  
Netherlands Development Finance Company
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Definition</th>
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<tr>
<td>ATM</td>
<td>automatic teller machines</td>
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<tr>
<td>BOOT</td>
<td>build-operate-own-transfer</td>
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<tr>
<td>CEO</td>
<td>chief executive officer</td>
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<td>FCR</td>
<td>feed conversion ratio</td>
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<tr>
<td>GDP</td>
<td>gross domestic product</td>
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<td>LIBOR</td>
<td>London interbank offered rate</td>
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<td>PPAR</td>
<td>project performance audit report</td>
</tr>
<tr>
<td>SME</td>
<td>small and medium enterprises</td>
</tr>
<tr>
<td>PL</td>
<td>post-larva</td>
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</tbody>
</table>

**Definitions**

“**A**” Loan  A loan funded with IFC’s own resources

“**B**” Loan  A loan funded by commercial banks and other institutional investors, with IFC acting as sole lender of record

“**C**” Loan  Other financial products that are categorized as quasi-equity finance, i.e., preferred shares, convertible debentures, subordinated loans, income participating loans and loans with warrants
Introduction

The International Finance Corporation’s primary mission is to encourage economic development in developing countries through the private sector. In carrying out that mission, IFC finances and provides advice for private sector ventures in partnership with other private investors. Its particular focus is in promoting development by encouraging the growth of productive enterprises and by creating efficient capital markets. The key to success for IFC thus lies partly in its own profitability and partly in the degree to which the enterprises it has financed contribute to the growth and development of their host countries.

About two years ago, IFC’s Board, through its Committee on Development Effectiveness, requested a program to provide more detail on IFC’s development impact. The program has evolved in three directions. First, IFC’s Economics Department began an annual review of five or six IFC projects to determine their development contributions. Second, the department established a database on development impact using questionnaire information collected annually on 30 to 35 projects. Third, IFC’s Operations Evaluation Group strengthened its own measurement of development effectiveness on five-year-old projects.

This paper reports on the first two of these three initiatives. It contains five case studies carried out by IFC’s Economics Department during 1995-96. The projects involved were chosen for their geographic diversity and because they represent a number of sectors in which IFC has traditionally done business. Two case studies cover banks in Africa and Latin America; one concerns an agribusiness project in Madagascar; another describes a textile operation in Indonesia; and the last reviews an infrastructure project in Argentina. Each of these studies is intended to illustrate in detail the various aspects of project contributions to development and, occasionally, some of the residual problems that will be the subject of future work.
1. Banco Industrial, S.A.

by D. Fitchett

For the past quarter of a century IFC has been active in building and supporting financial and capital market institutions and, through those institutions, viable firms. Chapters 1 and 3 examine the development impact of banks. The projects involved take place in Benin and Bolivia—both poor countries—and offer valuable illustrations of the banks’ contributions to development where government mismanagement of the economy had virtually wiped out the banking system. More recently, economic policies have improved greatly in both countries, allowing banks to play their role once again. The “with- and without-banks” contrast makes these cases particularly instructive.
The Bolivian Macroeconomic Situation

Since 1985, Bolivia has made considerable progress in implementing an ambitious program of macroeconomic and sectoral policy reforms. Initially focusing on stabilization and halting a hyper-inflationary spiral (peaking at over 24,000 percent per annum in 1984), the authorities have moved on to implement a broad range of macroeconomic and sectoral policy reforms, including:

- Price liberalization
- Unification of the exchange rate and liberalization of capital flows
- Simplification of the tax regime and improvements in tax administration
- Trade liberalization and customs reform
- Privatization of small commercial public enterprises
- Financial sector reform.

From 1991 to 1995, real GDP grew between 2.8 and 4.6 percent, although Bolivia remains one of the poorest countries in Latin America. Inflation trended steadily downward during 1991–94 from 21.4 percent to 7.6 percent, before increasing to around 12–13 percent in 1995. The implementation of this economic reform program has been accompanied by a steady increase in net international reserves.

In carrying out these reform programs, the Bolivian authorities have been supported by a number of focused adjustment credits and technical assistance from IDA, the Inter-American Development Bank and bilateral donors, while the IMF has assisted through a series of annual arrangements from an Enhanced Structural Adjustment Facility (ESAF). This support has been complemented by successfully reducing the external debt and debt service burden through concessional rescheduling with bilateral creditors, including five Paris Club reschedulings.

Financial Sector Liberalization

During the first half of the 1990s, the Bolivian financial system—and the banking sector that dominates this system—achieved an impressive rate of growth. After totaling about US$500 million at the end of 1989, by October 1995 bank deposits were some US$2.42 billion. This rapid rise of bank deposits was accompanied by an increase in the average term of these deposits from about 65 days in 1988 to 216 days in late 1995. This impressive growth was primarily due to the government’s policies of economic stabilization (initiated during the latter half of the 1980s), structural reforms and financial sector liberalization. The resulting macroeconomic stability, with a substantial reduction in inflation and moderate economic expansion, combined with financial sector liberalization, provided a fertile environment for financial market development. The process was accompanied by a high degree of “dollarization” of the economy, i.e., about 86 percent of all bank loans and deposits are denominated in U.S. dollars.

The sound macroeconomic management policies of the authorities have been accompanied by important institutional changes affecting the banking sector. In 1989, the Organic Statutes of the Superintendency of Banks and Financial Institutions were brought into effect. In 1993, the New Banking and Financial Entity Law was also promulgated. These formal changes have been accompanied by important efforts to strengthen the regulatory and supervisory capabilities of the Superintendencia and the Central Bank. These efforts have included staff training and new equipment and software to facilitate operating in an increasingly complex array of financial markets, moves that are fundamental to maintaining the confidence of the public and of external sources of finance in the probity of Bolivian financial markets and the institutions operating therein. The World Bank has determined
(Report No. 14754) that its provision of financial resources and support for institutional strengthening, training and equipment under the Financial Sector Adjustment Credit (FY88) were important in halting the downward slide in the banking system and providing a foundation for sound future financial sector development. The financial resources and technical assistance provided under lending operations has been reinforced by continuing country economic and sector work by the World Bank addressing the ongoing concerns to establish and maintain the domestic banking sector on a sound footing.1

World Bank Group Relationship with BISA

Bank/IDA Operations

The Banco Industrial, Sociedad Anonima (BISA) started operating in 1963 as a lending institution in order to channel financial resources from local and foreign loans to support the industrial and mining development of Bolivia. Its principal founders were the U.S. Agency for International Development (USAID), the Camara Nacional de Industrias, and a group of local investors. The initial financial support for BISA from the World Bank Group was Credit 455-BO, for US$6.2 million, approved by the IDA Board of Directors on January 15, 1974.2 The second operation, Loan 1290-BO, for US$10 million, was approved by the IBRD Board of Directors on June 22, 1976.3

IFC Operations

The IFC relationship with BISA has evolved over a period of almost 20 years. On June 16, 1976—only a week before the IBRD Board approved the second loan operation—the IFC Board approved a US$0.55 million equity investment and a US$10 million line of credit. After a hiatus of more than 10 years, the IFC Board approved a second US$10 million line of credit on June 16, 1987.4 A DM10 million swap to U.S. dollars was approved on June 28, 1990, and subsequently an NLG 5 million swap to U.S. dollars was approved on June 27, 1991. With the advent of a more attractive economic climate in Bolivia and the improvements in BISA management, the IFC Board approved on March 29, 1994, a US$25 million long-term line of credit with BISA, and concurrently purchased a 9.2 percent equity stake in BISA for US$2.7 million.5 Additional financial support came from the Corporacion Andina de Fomento (CAF) and the Netherlands Development Finance Corporation (FMO).

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1 Some of the weaknesses in the banking sector that have surfaced in recent years during the process of financial sector liberalization and growth are sketched on page 9.

2 Of the total amount of US$6.2 million, US$5 million was for onlending by BISA to medium-sized mining enterprises. The remaining US$1.2 million was used by the government to help finance a national survey of small mines and a technical assistance program.

3 A proposed project involving a loan of US$20 million for onlending to small and medium-sized mines, divided equally between BISA and the Banco Minero de Bolivia, was appraised in 1981, but was not processed further because of the failure of the Bolivian authorities to come to an agreement with the IMF.

4 On this occasion, IFC negotiated the sale of its existing BISA shareholdings to the Leon Prado Group; this is discussed later in this section.

5 The US$25 million IFC loan to BISA included a US$10 million “B” loan to be syndicated to foreign banks, thus providing an additional IFC vehicle to facilitate BISA’s access to international capital markets.
Evolution of BISA

The Leon-Prado Group (LPG) was among the initial shareholders of BISA. Mr. Julio Leon Prado, head of the LPG, assumed the Presidency of BISA in 1983. The LPG acquired a controlling interest in BISA in 1986, changing the institution's management and substantially cleaning up its loan portfolio. These changes included shifting its lending focus away from its earlier heavy involvement in lending to the mining sector. Furthermore, up until these changes in management in the mid-1980s, BISA had extensively lent to shareholder-related companies. With the progressive financial sector liberalization in the latter half of the 1980s, specialized banking of the type BISA had focused on disappeared. In these circumstances the new ownership of BISA shifted BISA from its traditional development finance functions over to a multiservice commercial banking institution—albeit one primarily focused on servicing a broadening corporate clientele, rather than embarking on a radical transformation into a consumer-oriented retail bank. The current distribution of BISA shareholding is presented in Table 1-1. BISA currently has seven branches in La Paz, two in Cochabamba, one each in Santa Cruz, Tarija and Sucre. It is studying the possibility of opening additional branches in Tarija and Sucre.

Since its founding, BISA has been an important source of term finance for Bolivian enterprises. Despite the remarkable transformation from a small specialized Development Finance Company (DFC) into a large multiservice commercial bank, BISA continues to play a key role in responding to the diverse financial needs of Bolivia's expanding private sector. At the end of 1993, about 42 percent of its loans were for a term of longer than one year—29 percent were for 4 years or more. Since the change in BISA management in the late 1980s, BISA has reoriented its loan portfolio away from its earlier focus in the 1970s and early 1980s on the mining sector. In recent years its portfolio has been about one-third in manufacturing, a quarter in commerce, and between 7 and 16 percent each in services, construction and agriculture. Concurrent with this shift in the composition of the lending portfolio, rapid growth in loans outstanding has brought BISA to occupy one of the top two or three positions in Bolivian banking in this regard.

With the improvements in the Bolivian economy in the late 1980s and early 1990s, BISA has increased loans to small and medium enterprises (SMEs), so that today an important part of BISA's portfolio represents SMEs. At the end of 1993, about 47 percent of the value of BISA's loans were for less than US$500,000. While most of these loans were primarily of a short-term nature, addressing working capital needs of the SMEs, among the long-term loan portfolio (those loans for more than one year) 11 percent of the value of all term lending was for loans of less than US$500,000. As many as one-third of BISA's clients may have a balance sheet value of less than US$2 million, and another third in the range US$2 million to US$5 million. As these firms tended to be closely (often family) held businesses without easy access to capital from the thinly traded local stock exchanges, capital resources for expansion come from either retained

### Table 1-1. BISA Shareholders, mid-1995

<table>
<thead>
<tr>
<th>Shareholder</th>
<th>Percentage of Total</th>
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<tr>
<td>Leon Prado Group</td>
<td>31.9</td>
</tr>
<tr>
<td>IFC</td>
<td>9.2</td>
</tr>
<tr>
<td>FMO</td>
<td>6.7</td>
</tr>
<tr>
<td>Corporacion Andina de Fomento</td>
<td>6.7</td>
</tr>
<tr>
<td>Bolivian Mining Companies</td>
<td>6.8</td>
</tr>
<tr>
<td>Herman Wille</td>
<td>5.3</td>
</tr>
<tr>
<td>Various other local investors</td>
<td>33.4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>
earnings or bank borrowing. The former source of financial resources for business expansion is limited, of course, by the rate of growth and profitability of the business and the latter source of financial resources is constrained by prudent commercial bank lending practices.

Typically in the SMEs in Bolivia, business owners often occupy the principal management positions and often have a strong understanding of the technological processes underpinning their manufacturing/business operations. BISA recognizes that SME lending has been a profitable and important line of business, and its loan officers work closely with this clientele. Careful loan application evaluation and loan supervision procedures—often corroborated through the broader range of non-banking services BISA provides to its clients—permits close tracking of borrower business operations and a flexible response to borrower needs. However, to maintain a high quality lending portfolio, prudence must be exercised with respect to the extent of indebtedness that may be contracted by SMEs. (These same concerns are reflected in the operations of Banco Solidario, a specialized microenterprise lending institution initially sponsored by BISA and discussed later in this chapter.)

As illustrations of the lending support BISA provides to SMEs, four such enterprises were visited, two of which are engaged in textiles production, one in pharmaceuticals and one flour mill. In each instance, BISA had provided a loan to an ongoing operation, rather than supporting the creation of a new firm. In a couple of instances, technological innovations accompanied the investment operations; on occasion, financing may also be provided for reconditioned machinery to be imported. The lending operations have provided for the expansion of output capacity and employment, and the investment has characteristically involved training and upgrading of production worker skills and earnings. The liberalized trade environment in which SMEs are operating has provided improved access to imported inputs as well as the technologies which BISA has financed. Despite the increased availability of similar imported goods, the local demand output of these firms has grown strongly without having to rely on trade or exchange rate restrictions, and in some cases the products are being exported to neighboring countries.

The fundamental reorientation of BISA from a traditional DFC to become a multiservice financial institution has been reinforced since 1990 by the formation of a series of enterprises designed to provide additional financial services—though of a non-banking nature—to BISA clientele. These are as follows:

- **RAISA—Almacenes Internacionales, S.A.**
  Established in December 1990, RAISA issues warrants and warehouse receipts backed by goods held in its own warehouses or those of a client. These documents may be accepted as collateral for short-term loans to clients by BISA or other Bolivian banks. RAISA’s services consist of storage, custody and care of goods, of either national or foreign origin. Its clients include businesses in lumber, textile, hydrocarbons, paper, farming and commerce. By the end of 1994, its volume of business had grown to US$50 million. It is presently the largest enterprise of its type in Bolivia.

- **BISA Seguros, S.A.**
  Established in August 1991, BISA Seguros is a general insurance company, providing fire, automobile and other property and life insurance coverage. Paid-in premiums (net of cancellations) in 1994 amounted to US$8.4 million. Covering 15 percent of the national market, this is the

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* Bolivian SME managers and technical staff appear to pay close attention to maintenance of machinery and equipment, and one often sees machinery in operation that would have been discarded elsewhere.
second largest insurance and reinsurance firm in the country.

- **BISA Leasing S.A.** Today the largest leasing firm in Bolivia, this enterprise was established in early 1993. It primarily provides leasing services for vehicles (heavy transport and local delivery), business/manufacturing plant and real estate, and heavy equipment for agriculture and construction. It has avoided the more volatile activities of leasing of consumer durables, such as personal automobiles and computer equipment. Its services include advice to its clients on insurance, shipping, transport and installation. It has actively sought to mobilize financial resources both domestically and from abroad to support its operations, and in 1994 it issued a US$700,000 three-year domestic bond issue for this purpose, while its shares are traded on the La Paz and Santa Cruz stock exchanges. It presently accounts for about two-thirds of the national leasing market. It is important to recognize that such leasing services provide BISA clients with an important and attractive alternative to the more traditional term lending operations to support their capital goods financing needs.

- **BISA Agente de Bolsa.** While BISA had originally been authorized in 1989 to operate as an agent in the La Paz stock exchange, in mid-1994 it moved to establish an independent business enterprise to carry out stock market operations and services for its clients. Its services include assistance in the issuing of stocks and bonds, listing of stocks on the La Paz and Santa Cruz exchanges, trading in stocks and fixed income instruments on the two exchanges, and management of personal investment accounts. BISA Bolsa also manages the second largest mutual fund in Bolivia, with about 900 clients and a current asset value of about US$45.0 million.

- **BISA Factoring.** BISA Factoring was established in late 1994 as the first factoring business in Bolivia. This service is designed to provide additional options for improved asset management and liquidity to the participating enterprises. While contracts for a total of US$4 million have so far been signed with eligible firms, sources of finance for BISA Leasing are still being developed.

**Expansion of Trade Finance**

The economic recovery program initiated in the second half of the 1980s has also been characterized by a rapid increase in the volumes of international trade. BISA has been active in expanding its financial services in support of the growth in such trade. Thus in 1993, the Bank had available from abroad short term lines of trade credit for about US$35 million. In late 1993 to early 1994, an effort was made to mobilize additional funds from foreign banks in order to satisfy the growing demand for trade finance from domestic producers and traders. By the end of 1995, lines of credit from abroad for almost US$148 million had been established. This expansion in resources mobilized for short-term trade credits was accompanied by an improvement in the terms on which they were made available to BISA, as the rate fell from LIBOR plus 2.25 percent at the end of 1993 to LIBOR plus 1.8 percent in 1994 and 1995. BISA also operates with medium-term (3-5 years) credit lines with U.S. Eximbank, Hermes, COFACE, and the Spanish export-import bank. These various lines are presently about 70 percent utilized.

**Technological Innovations**

BISA has also been on the leading edge in Bolivian banking circles in introducing technological innovations to better serve its clientele and reduce the cost thereto. During the period 1989–93, the investments in hardware and software were about US$2.3 million, with further investments antici-
pated for other innovations. All branches and agencies in La Paz, Cochabamba and Santa Cruz are on line and clients can carry out transactions to their accounts from any branch regardless of their location. BISA has also installed a system of automatic teller machines (ATMs), located in important commercial centers, which permit transactions in both local and foreign currency. Presently, there are 7 ATMs in La Paz, 4 in Cochabamba, 6 in Santa Cruz and one each in Sucre and Tarija. BISA has also taken the lead in introducing telephone banking and home banking (through a computer and modem in the client’s residence or place of business). To enhance its operations in the provision of international banking services, BISA was the first bank in Bolivia to subscribe to the SWIFT (Society for Worldwide Interbank Financial Telecommunications) system to permit a broader coverage for international financial transactions beyond its regular correspondent banks and reduce the costs of carrying out such services. Despite the demands of adequately servicing its existing clients, growing rapidly and introducing such innovations, BISA has sought to stress the efficiency of its staff, which now numbers about 300 throughout the country. While a number of the senior staff have worked in banks outside the country, with few exceptions all are Bolivian nationals. BISA also maintains an active internal training program to maintain and upgrade the skills of staff at all levels.

In summary, the market leadership role played by BISA through its expansion into these new areas has broadened the range of both traditional banking services and newer non-banking financial services available to the existing and new clientele of the BISA Group. It has also encouraged other commercial banks to follow suit in providing similar such services, thus broadening the range of choice of bank clientele with respect to the variety of these services, emphasizing customer convenience, and encouraging the provision of these services at a competitive cost to the banking public. In carrying out these activities, BISA has made important contributions to developing and enhancing the reliable financial services infrastructure which has served both depositors and borrowers and underpinned the recovery and growth of the Bolivian economy in this decade.

Potholes Along the Road to Growth

It is clear that BISA has carried out a remarkable metamorphosis from a small, traditional DFC relying primarily on external resources with a government guarantee, into one of the principal multiservice commercial banks in Bolivia. In part, the remarkable financial success of BISA is reflected in the Tables 1-2 through 1-6 in the Appendix to this chapter. Therein we see the record of accomplishment in both the expansion of the bank’s balance sheet and the positive financial returns which have accrued to the business as it has sought to maintain sound banking practices in a vulnerable environment. Concurrently, the expansion into the provision of non-bank financial services—outlined above—has further enhanced the profitability of the BISA Group.

This period of growth, however, has not been without its considerable challenges and difficulties. Restoring confidence of the public in the financial sector after the cataclysmic experiences of the mid-1980s has been no small task. The most recent example relates to the series of adversities which the Bolivian banking sector has countenanced since late 1994. At that time, two banks, Banco Sur and Banco Cochabamba, were forced into liquidation. These events more or less coincided with the Mexican financial crisis of late 1994, and there was serious concern about a “tequila effect” spreading to and endangering the Bolivian banking sector. However, there appears to have been no serious ripple effect from the Mexican crisis on the Bolivian banking system as a whole. One notable result of the apprehension which arose from the liquidation of the two banks in late 1994 was a perceptible redistribution of deposits among the remaining Bolivian banks, as cautious depositors
moved their holdings into banks—such as BISA—which were perceived to be safer.9

Unfortunately, in mid-1995 the continued vulnerability of some of the Bolivian banks again came to the fore, when a third bank was pushed into a forced sale; subsequent revelations of the shaky financial state of that bank may lead to a government-sponsored rescue plan. Moreover, by the end of 1995, it was estimated that about one-half of the country’s banks were not able to meet the risk-weighted capital adequacy ratios foreseen under the BIS agreements, which the Superintendencia is phasing in." (BISA was not among the banks cited as having such difficulties.) It may very likely be the case that in the period of rapid banking sector growth in the first half of the 1990s, there was the phenomenon that “a rising tide raises all ships.” It appears that regulatory and supervisory responsibilities and appropriate remedies may not have been adequately exercised by the authorities at that time, which otherwise would have identified the problem banks earlier. With the recent more vigorously exercised banking supervision being introduced, additional latent problems may yet surface—albeit so as to be addressed in a more timely manner. In order to address such contingencies, the government has established the Fund for the Development of the Financial System and Support of the Productive Sector. Several external agencies, including the World Bank, the Inter-American Bank and the Corporacion Andina de Fomento may provide financial assistance to this fund.

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9 BISA’s domestic fixed term deposits grew from US$77.5 million at the end of 1993 to US$121.9 million at the end of 1994 (see Table 1-5 in the Appendix to this chapter).


10 For a review of the BancoSol experience, one may consult Christen, Robert; Elisabeth Rhyne; Robert Vogel and Cressida McKean, Maximizing the Outreach of Microenterprise Finance: An Analysis of Successful Microfinance Programs, USAID Program and Operations Assessment Report No. 10, July 1995.
ment Corporation and several foreign NGOs. By June 1995, the Banco Solidario had 61,172 borrowers. Of its US$26 million portfolio in mid-1995, 92 percent was made up of loans of less than US$10,000 to a total of 60,683 borrowers, with an average loan size of US$457. The vast bulk of the lending (98 percent) was for service-sector microenterprises. Thus the BancoSol was massively orienting its resources and services towards the lower income groups engaged in microenterprise activities, who had not previously been considered “bankable” and had little or no access to formal financial services. Loans are provided to groups of three to eight (unrelated) persons, and there is mutual responsibility for loan repayment.

It is appropriate to highlight the important seminal role that BISA and Mr. Julio Leon Prado, its president and principal stockholder (along with several other Bolivian financial institutions) had in the establishment and development of the Banco Solidario. Mr. Leon Prado was in the early 1990s on the Board of Directors of PRODEM, an NGO out of which BancoSol evolved. BISA and two other local banks made initial capital contributions to the formation of BancoSol. Mr Leon Prado is currently also the President of BancoSol.

Assessing Development Impact: IFC Support to BISA

The Corporation’s initial support to BISA began in 1976, concurrent with the second IDA/Bank operation. On that occasion, the Corporation’s line of credit (US$10 million) and US$0.55 million equity investment were made within the context of a classical DFC operation, and IFC was represented on the BISA Board. In this initial operation, the focus of IFC institutional assistance was primarily building the capacity of BISA in the areas of DFC sub-loan appraisal and supervision and in portfolio management—an approach typical of World Bank Group financial intermediary interventions of that period. Broader questions of financial intermediary development were not a primary concern—reflecting in part the adverse broader sectoral and macroeconomic policy environments which prevailed. The project performance audit report (PPAR) on the Bank/IDA loans/credits in the 1970s, prepared by OED in 1985, is generally positive about the performance of BISA under those two operations. Nevertheless, IFC’s decision in 1988 to sell its shares in BISA to the Leon Prado Group followed a long period of economic crisis in Bolivia during which BISA did not pay dividends due to poor portfolio performance, and it seemed unclear that BISA would be able to recover from its weak portfolio.

The new BISA management, under the leadership of the Leon Prado Group, performed remarkably well in turning BISA around by the end of the 1980s, ratifying the Corporation’s decision in 1987 to provide a US$10 million line of term credit to BISA. In this new management environment, the Corporation’s decisions in 1990-91 to provide foreign currency swap lines to BISA represented a useful innovation. It supported BISA’s efforts to mobilize additional foreign resources from a variety of sources, and provided an effective risk-hedging financial instrument to BISA which, because of country risk considerations, would not have normally been available from the market at a reasonable cost. Furthermore, the “know-how” that would be acquired through the transaction would contribute to the development of BISA’s financial management capabilities.

As the macroeconomic policy environment further improved in Bolivia, the Corporation observed the consolidation of BISA’s financial performance under the leadership of the Leon Prado Group—including the efforts to broaden the variety of financial services—both banking and non-banking—to a wider range of clientele. In such circumstances, IFC undertook to provide the 1994 loan

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11 Subsequent to the passage of a recent banking law, which, inter alia, prohibited banks from owning other banks, BISA has divested itself of its shares in BancoSol.
and equity contributions, in the process mobilizing important contributions from both the CAF and the FMO. This operation represented the Corporation’s first syndicated term loan to a Bolivian financial institution, and expanded BISA’s commercial banking relationships abroad. In addition, this most recent operation includes several important financial covenants with respect to, e.g., risk-weighted capital adequacy ratios, management of arrears, loan loss provisions, and avoidance of term mismatch in the management of assets and liabilities. The implementation of these covenants is intended to reinforce the financial soundness of BISA in the context of a more complex and sophisticated financial market environment necessary for the sustainable development of the Bolivian economy.

But the Corporation’s loans and investment in BISA have additional dimensions beyond representing a sound use of IFC resources, making an important contribution to the broadening and deepening of financial markets in Bolivia, or endorsing the efforts of Bolivian banks to support the development of new modalities of financial services—including for previously “unbankable” groups. In the period of turmoil and concern in the Bolivian banking sector during the last year and a half, the recent actions on the part of IFC and the other external financiers who accompanied the Corporation’s initiative to support a soundly managed financial institution such as BISA were very timely. In a situation such as Bolivia’s, where barely a decade ago there was essentially a “melt-down” of the financial sector, the importance of such external expressions of confidence and support of financial sector institutions cannot be underestimated. These recent actions by IFC and others coincided with a period of growing public apprehension both in Bolivia and abroad in the soundness of the Bolivian banking system, as the events described above unfolded. IFC support—accompanied by the support of the CAF and FMO—was widely interpreted as an important expression of external confidence in a major Bolivian bank, and was highly complementary to the external support being provided by the Bretton Woods institutions and bilateral donors to the Bolivian authorities’ economic reform efforts.
### Table 1-2. Financial Results Summary for BISA, 1990–95 (US$000)

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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Assets</td>
<td>65,463</td>
<td>110,040</td>
<td>154,319</td>
<td>255,770</td>
<td>364,192</td>
<td>445,743</td>
</tr>
<tr>
<td>Liabilities</td>
<td>53,594</td>
<td>97,441</td>
<td>139,764</td>
<td>239,150</td>
<td>334,176</td>
<td>412,013</td>
</tr>
<tr>
<td>Equity</td>
<td>11,869</td>
<td>12,599</td>
<td>14,555</td>
<td>16,169</td>
<td>30,016</td>
<td>33,730</td>
</tr>
<tr>
<td>Net Income</td>
<td>1,304</td>
<td>1,165</td>
<td>2,780</td>
<td>2,879</td>
<td>4,113</td>
<td>4,657</td>
</tr>
<tr>
<td>Debt/Equity ratio</td>
<td>4.5</td>
<td>7.7</td>
<td>9.6</td>
<td>14.4</td>
<td>11.2</td>
<td>12.2</td>
</tr>
<tr>
<td>ROAA (percent)</td>
<td>2.1</td>
<td>1.3</td>
<td>2.1</td>
<td>2.8</td>
<td>1.3</td>
<td>1.1</td>
</tr>
<tr>
<td>ROAE (percent)</td>
<td>11</td>
<td>10</td>
<td>20</td>
<td>18</td>
<td>18</td>
<td>15</td>
</tr>
</tbody>
</table>

Sources: IFC Documents 1990-94; 1995 (est.) BISA.

### Table 1-3. BISA Loans Outstanding and Arrears, 1990–95 (US$000)

<table>
<thead>
<tr>
<th>Year</th>
<th>Loans outstanding</th>
<th>Percent arrears</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>45,338</td>
<td>17.96</td>
</tr>
<tr>
<td>1991</td>
<td>78,216</td>
<td>4.90</td>
</tr>
<tr>
<td>1992</td>
<td>121,162</td>
<td>3.08</td>
</tr>
<tr>
<td>1993</td>
<td>202,162</td>
<td>2.15</td>
</tr>
<tr>
<td>1994</td>
<td>294,863</td>
<td>1.66</td>
</tr>
<tr>
<td>1995 (est.)</td>
<td>324,722</td>
<td>4.07</td>
</tr>
</tbody>
</table>

Source: BISA presentation
Table 1-4. BISA Deposits, 1990–95 (US$000)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Amount</td>
<td>20,830</td>
<td>46,088</td>
<td>85,222</td>
<td>125,469</td>
<td>190,741</td>
<td>196,324</td>
</tr>
<tr>
<td><strong>Distribution by term:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sight</td>
<td>6,906</td>
<td>11,265</td>
<td>18,690</td>
<td>32,801</td>
<td>47,495</td>
<td>51,332</td>
</tr>
<tr>
<td>Savings</td>
<td>2,876</td>
<td>6,091</td>
<td>10,253</td>
<td>13,733</td>
<td>18,025</td>
<td>19,842</td>
</tr>
<tr>
<td>&lt; 90 days</td>
<td>7,703</td>
<td>25,774</td>
<td>37,060</td>
<td>34,388</td>
<td>35,133</td>
<td>25,748</td>
</tr>
<tr>
<td>91-180 days</td>
<td>157</td>
<td>1,868</td>
<td>10,787</td>
<td>21,125</td>
<td>35,567</td>
<td>33,007</td>
</tr>
<tr>
<td>181-360 days</td>
<td>5</td>
<td>951</td>
<td>7,278</td>
<td>2,836</td>
<td>3,923</td>
<td>4,875</td>
</tr>
<tr>
<td>&gt;360 days</td>
<td>—</td>
<td>—</td>
<td>254</td>
<td>18,907</td>
<td>46,883</td>
<td>56,100</td>
</tr>
<tr>
<td>Other terms</td>
<td>3,183</td>
<td>939</td>
<td>901</td>
<td>1,680</td>
<td>3,715</td>
<td>5,420</td>
</tr>
</tbody>
</table>

Source: BISA Presentation

Table 1-5. BISA Foreign and Domestic Resource Mobilization, 1990–95 (US$000)

<table>
<thead>
<tr>
<th>Year</th>
<th>Foreign Year</th>
<th>Domestic Fixed-term deposits</th>
<th>Domestic Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>24,925</td>
<td>10,987</td>
<td>9,843</td>
</tr>
<tr>
<td>1991</td>
<td>41,456</td>
<td>28,496</td>
<td>17,591</td>
</tr>
<tr>
<td>1992</td>
<td>39,115</td>
<td>55,564</td>
<td>29,657</td>
</tr>
<tr>
<td>1993</td>
<td>97,402</td>
<td>77,523</td>
<td>47,946</td>
</tr>
<tr>
<td>1994</td>
<td>125,040</td>
<td>121,982</td>
<td>88,759</td>
</tr>
<tr>
<td>1995 (6 mo.)</td>
<td>141,023</td>
<td>124,888</td>
<td>85,200</td>
</tr>
</tbody>
</table>

Source: BISA Presentation

Table 1-6. Summary Statistics of the BISA Group, mid-1995

<table>
<thead>
<tr>
<th>Date established</th>
<th>Banking Jul. 63</th>
<th>Warehousing Dec. 90</th>
<th>Insurance Aug. 91</th>
<th>Leasing Jul. 93</th>
<th>Securities Trading Aug. 94</th>
<th>Factoring Nov. 94</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net Worth, US$000</td>
<td>31,409</td>
<td>680</td>
<td>1,653</td>
<td>1,499</td>
<td>329</td>
<td>116</td>
</tr>
<tr>
<td>June 1995</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Approximate national market share, June 1995

| 10 percent | 17 percent | 19 percent | 63 percent | 12 percent | 44 percent |
| National ranking | 2/14 | 3/7 | 2/28 | 1/5 | 3/15 | 2/2 |

Source: BISA Memoria Anual 1994
In the early 1990s, the government of Argentina launched a privatization program which included the Buenos Aires water and sewerage systems. Aguas Argentinas, an international consortium in which IFC has invested, was set up to operate a 30-year private concession; operations began in May 1993. Currently, it is the largest privately operated water concession in the world. Assisted in part by broad-based assistance from the World Bank and IFC over an extended period, Aguas Argentinas has engineered an extraordinary turnaround of a state enterprise in decay into an efficient, viable private company. The residents of Buenos Aires have been the main beneficiaries. For the first time, chronic water shortages have been eliminated. Both the quality and quantity of potable water have been increased. Water tariffs paid by consumers have been cut. An ambitious capital expenditure program is being carried out.
making it possible for the first time to extend water and sewerage services to the poor with accompanying improvements in the environment and public health. In addition to investing its own resources, IFC has played an important catalytic role in mobilizing resources for this venture through syndications which have attracted long-term finance.

**The Problem**

During much of the post-war period, Argentina experienced low growth in productivity and a secular decline in savings and investment associated with high rates of inflation and unsuccessful attempts at stabilization. By 1990 national income per capita was 23 percent below that of 1977. Unsatisfactory economic performance was linked to growth of government spending, including large subsidies to finance distortionary sectoral investment incentives and loss-making state enterprises. At its peak, the consolidated public sector, which included well over 100 state enterprises, accounted for close to 40 percent of the country’s output. Many state enterprises were overstaffed, inefficient, highly protected and dependent on massive financial transfers from the central government. Most had become highly politicized. By 1990 the combined operating deficits of the largest state enterprises were over US$5 billion annually; federally owned public enterprises had accumulated close to US$15 billion of external debt.

During this period, large, destabilizing public sector deficits ranging from 5 to 16 percent of GDP, of which the state enterprises accounted for as much as two-thirds. These were financed through the inflation tax and through public sector borrowing which diverted savings from the private sector, thereby crowding out private investment. Chronic macroeconomic instability, rooted in the growing financing needs of an increasingly bloated government and state enterprise sector, could only be eliminated on a sustained basis by comprehensive reform of the public sector.

The state enterprise responsible for water supply and sanitation in Buenos Aires up to 1993—Obras Santitarias de la Nacion (OSN)—had many of the weaknesses found in most Argentine government-owned companies. Problems of operational efficiency, weak commercial and financial management, lack of funds, overstaffing and failure to address important environmental issues comprise the key areas of OSN’s poor performance. High unaccounted-for water loss (about 45 percent compared to 10-20 percent in well-managed systems), the consequence of inadequate maintenance, lax billing procedures and corruption adversely affected profitability and prevented expansion of service to poor households as the population of Buenos Aires expanded.

Inadequate metering and billing not based on actual consumption resulted in extremely high, uneconomic use of water (estimated at 500 liters per capita per day, double the norm for metered systems). Politically determined tariff increases that failed to recover the cost of providing water added to OSN’S financial problems. Hampered by a system in which state enterprises played an important role in political patronage, enterprises frequently filled technical positions with political appointees. For OSN this resulted in uneven technical management and a serious over-staffing problem that exacerbated the company's financial problem. With a work force of 8,000, the ratio of employees per 1000 connections was 8, compared to 2 to 3 for an efficient system.

Where OSN expanded coverage, it favored water over sewerage connection and wastewater treatment because this was the most effective way to increase revenues. With a growing number of households not connected to the sewerage system and inadequate investments in wastewater treatment, pollution of groundwater aquifers had become severe. As a consequence, groundwater contamination in the greater Buenos Aires area that had been served by OSN had become the single most serious pollution problem in Argentina. This was due to the health risk exposure for a large number of households—mostly low income groups—that depend on groundwater from their own wells for their daily use.
needs and because of the irreversibility of much of the contamination. High concentrations of nitrates, bacteria and arsenic as well as the presence, in some locations, of heavy metals, posed serious health risks.

By late 1994, only one wastewater treatment plant existed for Buenos Aires. It processed 5 percent of the city's sewage flow before discharging it into a river. The bulk of collected sewage was dumped without prior treatment into the River Plate. Industrial sewage also was dumped into several rivers and creeks across the metropolitan area that eventually flowed into the River Plate. In some cases upstream of the water intake. While most of the raw sewage discharge was well downstream of the water intakes for the drinking water treatment plants, some backflow occurred at high tide and under adverse wind conditions. Because of the enormous waste dilution and self-purification capacity of the river, indications were that under most conditions a minimal part of that sewage currently reaches the water intake.

The cumulative effect of these problems—operational, financial, institutional and environmental—ultimately resulted in unreliable service and exposure of the population of Buenos Aires to avoidable and unacceptable health hazards. Numerous attempts by the government and the international development agencies, including the World Bank, to overcome these problems failed. This record of weak performance and mismanagement and the need to find resources to carry out the backlog of investments required to reverse the system's widespread deterioration and provide service to Buenos Aires’s growing population, forced the authorities to seek alternative ways of dealing with the problem.

**The Solution: Bringing in the Private Sector**

In 1989 the Argentine government launched a program of radical restructuring and liberalization of the economy. At its core was a massive privatization program that included virtually all public services and federally owned enterprises. Results exceeded expectations by a wide margin in both the pace and extent of privatization, in the amount of revenue generated, and in the improved performance of the economy. At the outset, however, much of Argentina’s population viewed privatization with suspicion, especially where a natural monopoly was to be turned over to private owners. From the beginning, the World Bank and IFC provided important support for this effort. Their presence enhanced the transparency and credibility of the process, serving to widen international interest and increase competition in the bidding process. Through its Public Enterprise Reform Adjustment and Execution loans, the Bank provided support for public sector reform including divestiture of public enterprises, design of an appropriate regulatory framework and efficient regulatory institutions. The Bank played an important role in providing technical analysis to the government regarding appropriate options for private sector involvement—a management contract, a lease, a build-operate-own-transfer (BOOT), joint ownership, outright sale or a concession.

IFC supported the privatization program through informal discussions with those involved in the process regarding the market experience with privatization in other countries. Most importantly, it facilitated the transition to private sector participation in areas that previously had been the exclusive domain of the public sector in Argentina. It did this by helping a number of the newly privatized companies to gain access to international capital markets (and by indicating that prior to the start of the bidding process it would do so), thereby providing them with the resources to carry out required capital expansion programs. More recently IFC has tried to ensure future financing for these companies’ long-term investments by attempting to diversify and expand their potential investor base to include non-traditional long-term investors such as insurance companies and pension funds. Synergy between IFC and the World Bank has been strong. The Bank’s knowledge of the privatization process and of the problems left behind by OSN
helped the Corporation understand better what would be needed to create a viable private company. IFC’s first-hand knowledge of privatization and its transactions experience provided important information to the World Bank’s ongoing policy dialogue, thereby strengthening the reform process. And by helping to mobilize external resources, IFC influenced the pace of reform by speeding up privatization and supporting the newly formed company’s efforts to carry out ambitious and, in a number of cases, long-overdue investment programs.

Privatization was seen as a way of placing former state enterprises on a sound operational and financial footing by removing them from the political arena and by strengthening corporate governance. Efficiency gains achieved through privatization may be sufficiently large as to make the newly created private company self-sustaining financially, including payment for the higher capital costs associated with expanded service. Infrastructure was seen as a particularly promising area for privatization. Operating efficiency was generally low and enormous financing was needed to rebuild and expand infrastructure assets that had deteriorated to the point where they had a serious adverse impact on social welfare and constrained economic growth. In the case of water and sanitation services, the situation had become especially precarious.

Privatizing Delivery of Water and Sanitation Services: The Concession

Studios quantifying the impact of infrastructure investments on economic growth show that such investments have high returns. However, because water and sewerage systems are capital intensive, the payback period is long, and because they constitute a natural monopoly, they generally have not attracted private capital. For this reason and because they constitute a natural monopoly, they generally have been managed by state enterprises in most Latin American countries since the 1930s. Moreover, because of important public health and environmental effects, externalities associated with such investments are considerable. As a consequence, socioeconomic benefits of extending coverage may exceed the financial returns that accrue to private investors. Because of the long record of poor performance of OSN and recent positive experiences in some industrial countries—which indicate that the benefits of private sector participation in providing water and sewerage service can be substantial—the Argentine government attached high priority to privatizing delivery of water and sanitation services as early in the reform process as possible.

To reduce political opposition to privatization of OSN and to avoid the financial and political problems some countries had encountered in valuing the assets to be privatized, the government decided to forego selling the assets outright and instead opted for a 30-year concession. Such an approach helped to strengthen competition in the bidding process by lowering the cost of entry. In addition, concessions provide an incentive for the operator to seek least-cost output and investment decisions because the private operator’s profits depend upon recovering both recurrent and capital costs. A drawback of concessions is that the operator has little incentive to invest its own resources in the improvement and expansion of assets since their ownership resides with the state.

A key challenge in converting OSN into a private company was to strike the appropriate balance between the need to (1) set tariffs at a sufficiently high level so as to provide an adequate incentive for undertaking investments (estimated by Aguas at US$4 billion) needed to expand coverage, (2) improve quality of service, and (3) reduce pollution, while at the same time maximizing consumer surplus. To achieve this, the government decided that the concession would be awarded on the basis of the tariff level alone with a commitment to implement an agreed upon capital investment program within predetermined periods. The winning bid was submitted by the Aguas Argentinas consortium led by Lyonnaise des Eaux, a major French water operator, and six other companies including a Spanish water operator, Aguas de Barcelona, Sociedad Commercial del Plata S.A. and
several other Argentine companies. It committed to a 27 percent reduction in the existing tariff and a $4 billion investment plan.

The capital investment program contained in the concession contract calls for renewal of the distribution systems for drinking water and the collection system for sewerage, construction of new production and distribution facilities that will make expansion of the systems possible and provision of secondary wastewater treatment to reduce pollution in the receiving waters and the environment in general. By the end of the 30-year concession period, drinking water distribution is to be extended to 100 percent of the households in the greater Buenos Aires area. Connection to the sewerage system is to cover 90 percent of households. Operation of the concession began in May 1993.

**IFC’s Investments in Aguas Argentinas**

IFC has participated in three projects with Aguas Argentinas covering the company’s capital investment programs for 1993-95 and July 1995-June 1997. These projects, covering capital expenditures of US$329 million and US$582 million, respectively, include essential repairs and acquisition of equipment necessary for improving operations. They have also included new pump capacity, improvements to the drinking water filtration plant and expansion of the sewerage system.

IFC’s financial support of investment in the first project comprised:

- A direct investment of US$7 million for 5 percent of Aguas Argentinas common equity
- "A" and "C" loans of US$25 million and US$13 million, respectively
- A "B" loan of US$134.5 million raised through syndication.

The second project covering a portion of the capital expenditure program through for the next two years included:

- A US$40 million “A” loan

A third project was approved in June 1996 that includes:

- Up to a US$15 million “A” loan
- Syndication aimed at introducing non-traditional institutional investors to the IFC "B" loan program that would raise up to an additional US$65 million in the United States.

**IFC’s Role: Establishing Credibility as a Catalyst for Long-term Finance**

At the time that IFC first invested in Aguas Argentinas, there was little experience in developing countries through private sector involvement in large municipal water and sewerage systems. Participation of the private sector in a concession in a developing country was a new and untested idea. Moreover, there was virtually no precedent for a private company operating in such an environment raising substantial resources in international capital markets. Because of its size and innovative features, the Buenos Aires concession was monitored closely from the outset by developing country governments, by private sector investors and by private operating companies. For IFC it represented the first investment in a private water concession. Specifically, IFC’s contribution was to help define the project’s financial structure, to add transparency and credibility to the resource mobilization process, and, through enhanced credibility, play a catalytic role in attracting other participants. It did this by:

- Structuring the security package and financial plan so that it would be financeable.
Providing loan finance for its own account on a sufficiently long tenor to balance project needs with the shorter term loan conditions available in the market. By doing this, IFC enhanced the credibility of the financing plan, thereby increasing the potential for mobilization of resources from other investors.

Taking an equity position, which helped IFC mitigate the risk associated with a project that depends for its success on a consistent regulatory environment and continued access to external private finance.

At the time IFC became involved in the project, market financing for this sort of venture in a developing country had not been undertaken. Success of the concession depended heavily on raising resources from private international investors. Prior to IFC’s second project with Aguas Argentinas and as a result of the Mexican crisis, market sentiment went against Argentina, making it extremely difficult for private Argentine firms to raise financing abroad. Because of the newness of this type of venture and the subsequent adverse market sentiment, IFC’s presence was essential. Without it, market financing on appropriate terms and of the magnitude required is unlikely to have been forthcoming. And without this financing, it would have been difficult for the government to simultaneously achieve its reform objectives of privatizing water and sanitation services and eliminating all government subsidies and guarantees in the provision of such services. By taking on the project, IFC introduced financing for this purpose to the market.

The Successful Turnaround: Establishing a Viable Private Company

Since its inception Aguas Argentinas has made impressive progress in strengthening the operating efficiency and finances of the company it inherited in 1993. Service provided by OSN was deficient. Only 70 percent of the households living in the concession area were connected to the poorly maintained and unreliable drinking water network. During periods of peak demand, including most of the summer, pressure was inadequate to maintain service throughout the day. To ensure water service throughout the day, higher income consumers constructed storage tanks in which water would accumulate throughout the night. Three million inhabitants not connected to the system relied upon wells, many of which were contaminated. Water supplied by the system was frequently substandard.

OSN’s financial performance had been poor. In the latest year for which OSN prepared a financial statement (1991), its billings of US$290 million only covered operating costs. Negligible investment was being carried out by OSN and it had little debt. Delinquent accounts averaged 15 percent for households; for state enterprises it was 50 percent; a number of the latter were not billed at all.

Aguas Argentinas has improved both operational and financial performance dramatically. Its first step was to implement an emergency investment program focusing on urgent repairs and rehabilitation throughout the system. Aguas also carried out important productivity-enhancing investment in equipment, meters and design work for infrastructure expansion. In addition, major investments were made in rehabilitation of water treatment plants to upgrade them to design volumes and to enable the system to meet standards set by the World Health Organization. This program has now largely been completed and Aguas has begun to implement the remainder of its first five-year capital investment program.

Simultaneously, Aguas set out to rationalize its operations in order to increase efficiency, reduce expenditures and increase revenue. Results have been outstanding. From a loss of US$23 million in 1993 (the result of inheriting a badly deteriorated system from OSN, low revenue and heavy start-up costs including US$12 million of amortization payments on the government/Aguas-funded voluntary retirement program), the company was generating a profit by the third quarter of 1994. Its profit for the year was US$25 million. In 1995 profits more than doubled to US$54 million.
(detailed financial data for the company are presented in the Appendix). Based on this strong improvement in financial performance, Aguas Argentinas has managed to supplement the cash generated by its own operations with substantial external borrowing. This has permitted it to implement the capital expansion program to which it is contractually committed. Thus, in just three years since it took over the Buenos Aires system, Aguas Argentinas has achieved key objectives: to increase its operating efficiency and financial performance making it possible to operate the city’s water and sewerage systems, and finance expansion outlays without direct cash subsidies or guarantees from the government.

On the expenditure side Aguas did this by implementing an expense control system designed to closely monitor and control procurement and cash flow. Savings were achieved through:

1. A 10 percent reduction in energy costs through equipment replacement
2. Introduction of a centrally controlled procurement system that lowered costs by increasing competition among suppliers
3. A shift to a tighter inventory control procedure which increased inventory turnover and reduced working capital requirements
4. Renegotiation of contracts for the purchase of chemicals used in water treatment, which resulted in savings of US$13 million annually.

In addition, the serious overstaffing problem Aguas would have inherited from OSN was dealt with through an Aguas/government-financed voluntary early retirement program. As a consequence, the work force was reduced by almost 50 percent.

To increase revenues Aguas:

1. Updated its customer data base, thereby improving the basis for applying tariffs
2. Decreased clandestine connections (nearly 100,000 were identified) to focus on large commercial users
3. Increased its billing collection rate from 83 percent in 1993 to 96 percent in 1995
4. Increased billing based on meters from 31,000 customers in 1993 to over 150,000 in 1995
5. Received a 13.5 percent increase in its average tariff based on the government’s request to increase specific capital expenditures and to accelerate closure of OSN’s wells at serious risk of contamination.

As a result, Aguas almost doubled its billings while keeping the average tariff 17 percent below that of OSN.

One of the most serious challenges faced by Aguas was to deal with the human resource problem it inherited from OSN. While OSN had at one time a well-trained technical staff, skills had eroded seriously in recent years as real wages fell. There was growing frustration among staff within the institution over its inability to carry out needed maintenance to prevent the system from falling into disrepair and capital expansion required to meet the needs of the city’s rapidly expanding population. To develop a corporate culture of commitment to quality, service and performance, it was necessary to motivate and train staff remaining with Aguas. To achieve this the government introduced a program of employee participation in the company’s equity. The employee participation rate is 95 percent. In addition, Aguas has carried out a massive training program and real wages have increased substantially since operation of the concession began.

**Project Impact**

The role of infrastructure in development has long been recognized as substantial and generally greater than investment in other forms of capital. Infrastructure not only generates consumer welfare, but
it creates new investment opportunities, reduces production costs and can have an important impact on the environment. The following economic and social benefits have been generated by the project.

The most immediate benefits of privatization were improvements in the welfare of consumers of water and sanitation services. At that time the average water tariff was reduced by 27 percent with a corresponding increase in consumer welfare. Subsequently, improved management, rationalization of the company’s labor force and investments carried out by Aguas Argentinas have reduced costs and increased both the quantity and quality of potable water produced for Buenos Aires (see Table 2-1). In accordance with the concession agreement, the water tariff was subsequently raised by 13.5 percent to cover, among other things, costs associated with immediate closure of endangered wells (and connection of households that had relied on these wells to the network) that had not been envisaged in the original agreement. At present the tariff remains well below that prevailing in early 1993 in nominal terms.

Since taking over the Buenos Aires system, Aguas has increased water production substantially and added over half a million new consumers (see Table 2-1 and Figures 2-1 and 2-2). This has been achieved by extending and rehabilitating the existing network, and by increasing treatment capacity. Aguas has increased sewage service substantially by adding to the existing wastewater system and by rehabilitating critical portions of the system. It has incorporated into the concession area the Municipality of Quilmes (a low-income neighborhood in southern Buenos Aires). This will add an additional 1500 km to the existing water network and extend service to an additional 540,000 consumers. The original concession contract (excluding Quilmes) calls for 1 million inhabitants to be added to both the water supply and sewerage systems every five years for the next fifteen years. By the end of the 30-year concession period, coverage in water supply would be 100 percent. This will require an estimated US$4.1 billion of investment, of which US$1.2 billion is to be done in the first 5 years.

Potable water quality has been improved in Buenos Aires as a consequence of better chemical products used in production of potable water and improvements in the water treatment process itself. Treatment of wastewater has also improved owing to operation of secondary filters that had been installed by OSN but never operated. Customer relations also appear to have improved as a result of quicker response to complaints. While the number of complaints for broken pipes is still high, average response time is down from 180 to 48 hours.

For more than a decade prior to the concession, water shortages occurred throughout Buenos Aires during the peak demand of summer. Surveys of household response for dealing with unreliable water supply reveal that almost all households cope by establishing an alternative supply including installation of storage tanks and supplemental pumps and use of wells, public taps, rivers and street vendors. Costs are relatively high. And they are regressive since low income households generally spend a higher proportion (an average of 5 percent) of their income dealing with this problem. Since the beginning of the concession and for the first time in many years, Buenos Aires has not experienced water shortages. This was the result of increasing production of potable water, of improving the efficiency of the pumping system and of reducing water losses in the system. As a consequence, consumer outlays on alternative sources of water have been sharply reduced.

Argentina has more environmental pollution than most countries of comparable development. Groundwater contamination in urban areas is one of the most severe pollution problems the country faces. This results from the long-standing deficit in sanitary and wastewater treatment infrastructure. Given the large number of people affected (a large proportion of households in greater Buenos Aires...
Table 2-1. Buenos Aires Water and Sanitation System: Indicators of Operational Progress

<table>
<thead>
<tr>
<th>INDICATOR</th>
<th>DEFINITION</th>
<th>to Dec. 1993 (8 months)</th>
<th>to Dec. 1994 (incl. Quilmes)</th>
<th>to Dec. 1995 (incl. Quilmes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. WATER SYSTEM</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of Connections Water</td>
<td>(Units)</td>
<td>1,170,000</td>
<td>1,200,000</td>
<td>4,900,000</td>
</tr>
<tr>
<td>Average Production</td>
<td>(m3/month)</td>
<td>108,950,000</td>
<td>117,500,000</td>
<td>113,300,000</td>
</tr>
<tr>
<td>Storage Volume</td>
<td>(m3)</td>
<td>1,456,150</td>
<td>1,456,150</td>
<td>4,456,150</td>
</tr>
<tr>
<td>Treatment Capacity</td>
<td>(m3/day)</td>
<td>3,640,000</td>
<td>4,550,000</td>
<td>4,600,000</td>
</tr>
<tr>
<td>Length of Water Pipe System</td>
<td>Kms.</td>
<td>11,000</td>
<td>11,324</td>
<td>13,300</td>
</tr>
<tr>
<td>Total Population</td>
<td>No. of People</td>
<td>8,580,000</td>
<td>8,650,000</td>
<td>9,300,000</td>
</tr>
<tr>
<td>Served Population</td>
<td>No. of People</td>
<td>6,000,000</td>
<td>6,200,000</td>
<td>7,022,000</td>
</tr>
<tr>
<td>Water Consumption</td>
<td>(Lts. per cap./day)</td>
<td>620</td>
<td>644</td>
<td>550</td>
</tr>
<tr>
<td>Water Availability</td>
<td>(Avg. hours p/day)</td>
<td>24</td>
<td>24</td>
<td>24</td>
</tr>
<tr>
<td>Water Rationing</td>
<td>(% of Pop. rationed)</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Consumer Complaints per Year</td>
<td>(Units)</td>
<td>40,900</td>
<td>71,800</td>
<td>90,200</td>
</tr>
<tr>
<td>Number of Meters</td>
<td>(Units)</td>
<td>83,588</td>
<td>130,783</td>
<td>173,496</td>
</tr>
<tr>
<td>Meters Repaired and Installed Annually</td>
<td>(Units)</td>
<td>10,966</td>
<td>55,728</td>
<td>55,000</td>
</tr>
<tr>
<td>2. SEWERAGE SYSTEM</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of Connections Sewerage</td>
<td>(Units)</td>
<td>700,000</td>
<td>732,000</td>
<td>800,000</td>
</tr>
<tr>
<td>Served Population</td>
<td>No. of People</td>
<td>4,700,000</td>
<td>4,950,000</td>
<td>5,800,000</td>
</tr>
<tr>
<td>Volume Collected</td>
<td>(m3/month)</td>
<td>82,232,000</td>
<td>84,012,000</td>
<td>74,635,000</td>
</tr>
<tr>
<td>Volume Treated</td>
<td>(m3/month)</td>
<td>3,413,000</td>
<td>3,546,000</td>
<td>3,733,000</td>
</tr>
<tr>
<td>Primary Treatment</td>
<td>(m3/month)</td>
<td>3,413,000</td>
<td>3,546,000</td>
<td>3,753,000</td>
</tr>
<tr>
<td>Secondary Treatment</td>
<td>(m3/month)</td>
<td>3,413,000</td>
<td>3,546,000</td>
<td>3,753,630</td>
</tr>
<tr>
<td>Volume Consumed</td>
<td>(Lts. per cap./day)</td>
<td>460</td>
<td>462</td>
<td>480</td>
</tr>
<tr>
<td>3. PERSONNEL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of Staff</td>
<td>No. of People</td>
<td>3,723</td>
<td>3,880</td>
<td>4,251</td>
</tr>
<tr>
<td>Management</td>
<td>No. of People</td>
<td>83</td>
<td>118</td>
<td>140</td>
</tr>
<tr>
<td>Professional</td>
<td>No. of People</td>
<td>241</td>
<td>307</td>
<td>303</td>
</tr>
<tr>
<td>Clerical</td>
<td>No. of People</td>
<td>986</td>
<td>1,030</td>
<td>1,100</td>
</tr>
<tr>
<td>Operative</td>
<td>No. of People</td>
<td>2,413</td>
<td>2,424</td>
<td>2,709</td>
</tr>
</tbody>
</table>

use groundwater to meet their daily needs) and the low potable water and sewerage coverage in the outer municipalities, greater Buenos Aires presents the greatest pollution problems in the country since a large share of the population uses contaminated drinking water. Main sources of contamination are septic tanks and, to a lesser extent, industrial effluents. Because of this, the most effective means of dealing with the problem is to extend water supply and sewerage services to the outer, low-
Income areas of Buenos Aires as envisaged in the concession’s Master Plan. Substantial progress in carrying this out has already been achieved.

Costs linked to contaminated drinking water include health damages and associated productivity losses. Such health problems are widespread in Argentina, but are highly concentrated among the poor. Parasitic infections and malnutrition of the young caused by exposure to contaminated waste and drinking water, the two most important problems, are typical diseases of poverty. Their persistence in an upper-middle income country is an indication of the extent to which investments in
the water and sewerage systems in Buenos Aires had lagged. Gastrointestinal diseases are far and away the most important single problem, accounting for 53 percent of health problems.

Lack of access to safe water in Argentina is estimated to cause 77,541 episodes of diarrhea and 111 deaths per year, over half of which are in greater Buenos Aires. Based on studies carried out in a number of countries, the median reduction in diarrhea morbidity is 27 percent and in diarrhea mortality is 41 percent following the introduction of sanitation infrastructure. Using the human capital valuation method of estimating the annual economic cost of morbidity and mortality for that share of the population not covered by potable water and sewerage infrastructure, it is estimated that losses of over US$70 million annually. While these figures are very rough estimates, they illustrate the possible order of magnitude of potential health benefits associated with investments to be carried out under the Buenos Aires concession.

Extending Service to the Poor

The outlying areas of greater Buenos Aires—to the south, west, and northwest of the city—have the highest concentration of low-income households. It is in these areas that water and sewerage services are most deficient. In the municipality of Moron to the northwest, for example, only 30 percent of households were provided with water, and only 25 percent are connected to the sewage collection system. By the end of the 30-year concession period, water service coverage is to reach 100 percent. Investments aimed at extending service are being carried out in these areas. Civil works have already begun in a number of these areas. In Moron, for example, water coverage has already been increased to 41 percent. In the sixth year of the concession it will reach 70 percent.

Although ability to pay for water and sewerage services is not a constraint for those above the poverty line, evidence indicates that it is for those classified as poor (one-third of the population of greater Buenos Aires not covered by services are in this category). And although the poor potentially are to be major beneficiaries of the investments to be carried out under the concession agreement, existing incentives favor expansion of service to those with the ability to pay. An issue yet to be resolved is the extent to which the poor are to be included as beneficiaries of future investments. To deal effectively with this it may be necessary for the concession contract to be clarified with regard to extending services to low-income consumers that are not yet served. This may require that incentives be put in place which would permit the private operator to extend service to those with limited payment capacity; if necessary, explicit lump-sum subsidies to support low-income consumers may have to be considered. Evidence to date suggests that this problem will be dealt with effectively in a way that maintains appropriate investment incentives for the private operator while achieving broader societal goals.

Linking to the Local Economy

The sharp increase in the pace of investment in rehabilitation and extension of water and sewerage infrastructure in the greater Buenos Aires area has had an expansionary effect on the local economy. It has resulted in additional sales by local firms, additional investment by these firms, and additional employment. Aguas Argentinas estimates that 15,000 new jobs have been created outside of the company since it took over from OSN as a result of the privatization. It is believed that these jobs have been generated in the execution of the civil works as well as in Aguas’ local suppliers. Production of pipes has risen as a consequence of purchases from Oblak, a local company. It has also resulted in a US$10 million investment in development and adoption of new technology by Oblak. Increased purchases by Aguas from Meranol, a local producer of chemical products, permitted the company to invest US$5 million to modernize their plant, to improve the quality of their product and to reduce costs. Quimica del Norte, a local producer of chlorine and main supplier of the Buenos Aires water treatment plants, has signed an US$8 million contract with Aguas. This has permitted it to make
large investments to renovate its plant and to adopt newer technology.

**Human Resource Development**

Within the company Aguas is making a major investment in human resources. Training is being provided to the company’s employees at all levels (115,000 hours of training per year are being provided). Almost all of this training is to Argentine employees; expatriates represent less than 1 percent of the company’s workforce. As training of local staff is completed, the company is increasingly shifting responsibilities to them. The announced policy of the company is that many of the expatriate staff that leave the company will be replaced by local staff. Within the company, Aguas has reduced its employee headcount by 4,000. To compensate its labor force for the productivity gains that have been achieved through its investments, improved management and the training of local staff, average wages have increased 43 percent since the company took over.

**Rationalizing Government**

During most of the post-war period Argentine development has been hampered by severe macro-economic and financial instability caused in large part by a bloated, ineffective and financially weak public sector. Loss-making state enterprises, many of which were overstaffed, poorly managed, highly protected, inefficient and dependent on large subsidies from the central government for their survival, bear much of the responsibility for this situation. Allocation of financial resources operated through a perverse system of incentives that rewarded the most poorly run state enterprises with the largest financial need with the largest subsidies. Infrastructure, which was entirely owned, managed and financed by the government, deteriorated severely under this system. Government was poorly suited to the roles assigned to it. This project, part of a larger effort to rationalize the public sector by privatizing state enterprises on a massive scale and to shift the government from operator to regulator, has played an important role in this process. The project’s success has helped to ensure the sustainability of this strategic reform.

**Institutional Innovation: The Demonstration Effect**

As noted earlier, there was little precedent in developing countries through private sector involvement in the provision of this important public service. Because of its size and innovative features, the performance of the project has been and continues to be closely monitored. While it is too soon to reach a definitive judgment about the project’s success, there is strong evidence that it will be successful and that its development impact will be great. Over 25 developing countries in Latin America, Africa, Eastern Europe and Asia are currently studying the Argentine model to determine whether it would fit their own circumstances. Preliminary evidence suggests that several will choose this alternative.
APPENDIX

Financial and Operating Performance of Aguas

Following is a description of Aguas’ operating performance and 3 years of financial projections.

**Income Statement**
(USUS$ million)

<table>
<thead>
<tr>
<th></th>
<th>1993*</th>
<th>1994</th>
<th>1995</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net Revenues</td>
<td>163</td>
<td>291</td>
<td>361</td>
</tr>
<tr>
<td>Net Income (Loss)</td>
<td>(23)</td>
<td>25</td>
<td>54</td>
</tr>
<tr>
<td>Long-term DSCR</td>
<td>n/a</td>
<td>5.0</td>
<td>4.4</td>
</tr>
</tbody>
</table>

**Balance Sheet**
(USUS$ million)

<table>
<thead>
<tr>
<th></th>
<th>1993*</th>
<th>1994</th>
<th>1995</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Assets</td>
<td>107</td>
<td>124</td>
<td>106</td>
</tr>
<tr>
<td>Net Fixed Assets</td>
<td>99</td>
<td>245</td>
<td>479</td>
</tr>
<tr>
<td>Total Assets</td>
<td>206</td>
<td>369</td>
<td>58</td>
</tr>
<tr>
<td>Total Long-term Debt</td>
<td>0</td>
<td>123</td>
<td>173</td>
</tr>
<tr>
<td>Shareholders’ Equity</td>
<td>95</td>
<td>126</td>
<td>186</td>
</tr>
<tr>
<td>Long-term Debt/Equity Ratio</td>
<td>0:100</td>
<td>49:51</td>
<td>48:52</td>
</tr>
</tbody>
</table>

* 1993 was an 8-month year.

The year-end financial results for 1993 (an 8-month year) showed a loss, largely reflecting start-up costs. By the second quarter of 1994 Aguas was generating a positive cashflow, and for 1995 Aguas recorded a net income of US$54 million.
3. Bank of Africa–Benin

by G. Pfeffermann

Benin is a west African country of 5 million people with a GDP per capita of about US$430. The economy is highly open and strongly dependent on primary and tertiary activities. The primary sector provides the largest export commodity: cotton. A large tertiary sector dominated by commerce accounts for one-half the country's GDP, and its dynamic re-export activities account for two-thirds of export revenues. In contrast, the industrial sector is small (about 13 percent of GDP).

In a 1972 coup d'état a military government took over Benin, bringing the bulk of the formal economy under state control. All financial institutions were nationalized, as were many private commercial and industrial enterprises; and many public enterprises were created. Collective farming was encouraged, state farms were established with East Bloc help, restrictions
were placed on the marketing of food crops and the marketing of export crops was entrusted to state monopolies.

Although the impact of these policies on growth was initially favorable, the end of the boom in neighboring countries and the completion of major public sector projects in Benin revealed an economic structure saddled with poorly designed, low-return investments; heavy external debt service; a large part of the productive economy without adequate incentives; and a state-dominated modern sector suffering losses. The banking system was virtually bankrupt because of corruption, mismanagement and loans made to the public sector. In 1987 the severity of the economic and financial crisis was evident in the collapse of the banking system. In early 1989 the three state-owned commercial banks became illiquid.

The military government was subsequently brought down by a series of strikes. In December 1989 the country’s president called a watershed conference which ushered in multi-party democracy. After a new constitution was approved in December 1990, elections were held in early 1991: the winner was Nicéphore Soglo, a former World Bank executive director. Starting in early 1990, the government embarked on a vigorous structural adjustment program supported by the International Monetary Fund (IMF) and the World Bank. Its strategy centered on rationalizing the role of the state, improving the fiscal position, containing inflationary pressures, and restoring production incentives.

The results have been encouraging. GDP growth has averaged 4 percent during 1990-95, far in excess of Africa’s average. Figures for cotton, textiles, oil palm products, groundnuts and pineapples have improved. Raw cotton production increased from 109,000 tons in 1988-89 to more than 250,000 tons in 1993-94. Recovery of tradable production was further encouraged by the 50 percent devaluation of the CFA franc in 1994. The structure of the economy is much sounder now than it was under the previous regime.

After the state-owned banks were liquidated, not a single financial institution operated in Benin; all commercial banks were under liquidation and the only existing insurance company was technically insolvent. One of the most urgent needs was to establish safe channels to transfer money from Beninese workers abroad to their families at home; another was to restore normal import financing. The World Bank supported the diagnosis, audits and strategy for closure of the state-owned banks through a public enterprise reform credit and technical assistance. Financial reform was supported by two structural adjustment credits and economic and sector advice.

The supply response to policy improvements depends crucially on microeconomic initiatives, and this is where IFC entered the broader World Bank strategy. Initially, the need to attract private banks almost at any cost in order to restore a minimal financial infrastructure led the government to grant an operating license to an establishment which performed limited services and made no loans. A second bank, Bank of Africa–Benin (BOAB), was incorporated in 1989 when development policies began their shift away from state control.

**Bank of Africa–Benin and IFC Support**

The Bank of Africa–Benin (BOAB) was the second private bank to be established in Benin in the wake of the economic and financial debacle. Since then several other private banks have opened in Benin and the financial situation has improved steadily. BOAB is majority-owned by Beninese private sector investors, including well-established business people. It has become the largest commercial bank in Benin. Proparco, a subsidiary of the French Caisse Française de Développement in charge of the private sector, is one of the foreign equity holders. IFC took a 5 percent stake in BOAB (1993) which it maintained by exercising preemptive rights in 1995 (both Africa Enterprise Fund investments).

BOAB’s founder and manager, already a banker in Mali, saw the opportunities and the risks afforded by a virtual institutional vacuum and created BOAB in the expectation that some of the deposits made
abroad by Beninese households and firms would welcome a local commercial bank. The bet paid off and deposits increased rapidly. BOAB focused on the most immediate needs: to establish a financial institution that could handle money safely, transfer funds locally and abroad (a most important function to the many Beninese workers in France and their families back home), handle deposits and transact letters of credit. The latter is particularly crucial in an economy where services and transit operations are very important.

The bank’s loan operations have increased rapidly in recent years, including term credit drawing on lines from Proparco, FMO (of the Netherlands) and the Banque Ouest-Africaine de Développement (BOAD). BOAB’s market share is 40 percent of banking assets in Benin. BOAB has been profitable ever since its establishment.

From 1990 to 1995, the asset structure shifted from a dominance of liquid assets to the emergence of loans and investments—from 3 percent of total assets in 1990 to 25 percent in 1994 and to 52 percent in 1995. The Bank made a strategic decision to increase its lending to the growth sectors of the economy. As a result, loans grew by 40 percent in 1995 to CFA18 billion up from CFA13 billion in 1994. At the same time, BOAB has significantly reduced its deposits at the Central Bank from 85 percent of BOAB’s total assets in 1990 to 43 percent in 1994 and then to 9 percent in 1995.

The breakdown of deposits since the beginning of operations in 1990 has been characterized by a faster growth of short-term over longer term deposits (even though this trend tapered off somewhat in 1995) and the increasing replacement of public institution deposits by private sector ones. BOAB is currently developing its medium- to long-term refinancing.

ICF’s role in BOAB itself has centered on three areas. Making active use of its Board position, IFC has:

1. Given moral support to management against unsound loans and helped strengthen credit screening procedures
2. Contributed to BOAB’s capital increase
3. Supported BOAB’s regional expansion.

BOAB is very much one entrepreneur’s child—BoAB’s managing director. Even though increasingly sophisticated management systems were introduced as BOAB expanded and diversified its activities, to this day the success of the bank depends largely on his personal experience and entrepreneurship. Likewise, BOAB’s regional and institution-building strategies are essentially one man’s branchchild. The need for an outstanding individual who possesses the vision, the technical and managerial skills and will necessary to take such risks undoubtedly limits the replicability of BOAB.

Development Impact

ICF’s impact on Benin’s economic and social development, by virtue of its stake in BOAB and its support for the institution, centers on six areas:

- Mobilizing local savings
- Modernizing banking
- Building new institutions
- Supporting privatization
- Supporting exports
- Supporting small and medium enterprises.

BOAB’s long-term strategy, which underlies much of this development impact, rests on the premise that in a small economy where large firms are few, banking expansion must depend on small and medium local businesses, and creating new financial institutions in neighboring countries. The bedrock of BOAB’s development is its credibility as a long-haul player, which results from its combining efficient modern banking services with Beninese shareholdership of over 600 persons (representing initially 65 percent of capital). Local shareholders include business people who help promote the bank’s activities.
Mobilizing savings was BOAB’s first objective at a time when no credible financial institution existed in Benin. This objective was achieved to the point where deposits represent 85 percent of liabilities. Indeed, in common with other Union Economique et Monétaire Ouest-Africaine (UEMOA) banks, BOAB is now experiencing excess liquidity, largely a result of the regional central bank’s capital flow restrictions out of the zone. BOAB offers a broad range of savings instruments. The number of individual savings accounts exceeds 21,000. The volume of individual savings is sensitive to interest rate changes governed by the regional central bank. That volume rose steadily before flattening out in 1995. BOAB has had an influence in causing competing banks to open small savings accounts.

In an environment where modern, efficient banking services recently did not exist, BOAB is expanding its services. This includes branches in Parakou, Porto Novo (Benin’s second-largest city), and (most recently) in Bohicon, all interconnected with the bank’s electronic information management system. BOAB also invested in Benin’s first ATMs and its first system of plastic banking identity cards. BOAB also offers a good correspondent bank network in Europe and the U.S.A. It has expanded term lending (2-7 years, mostly 3–5 years) which now accounts for about one-third of the loan portfolio. Some 90 percent of term loans are being financed out of savings deposits and the bank’s own resources, and the balance out of aid programs. BOAB’s development impact includes a spur to competition as it encourages other banks to improve their services. BOAB has been training its growing staff (175, including 2 permanent expatriates and 3 foreign consultants engaged mainly in training activities) internally as well as by means of external courses and seminars, hence transferring technology and human capital to Benin: none of the local staff has left so far.

The introduction of a modern efficient bank is itself a major institution-building achievement. Having established a credible base, BOAB, with IFC’s support, innovated along two lines. First, it diversified the range of financial institutions serving Benin’s market, establishing the country’s first leasing company (Equibail) in 1994; this company started operations in 1995. In 1993 IFC had conducted a study of the zone’s regulatory framework and had helped to identify a technical partner for Equibail. Most recently, BOAB, again with IFC’s support, invested as a minority shareholder in Benin’s first private life insurance company (Union Béninoise d’Assurances-Vie). BOAB was also the first in Benin to underwrite CFA-denominated corporate debentures, which were placed in Niger and in Mali.

Along a second institution-building line, BOAB has increased its regional reach. BOAB recently subscribed to shares, with IFC participation, in a bank in Côte d’Ivoire (BOA-CI) as well as a regional venture capital company (Cauris) based in Togo.

BOAB also is supporting the government’s privatization efforts. Benin’s major beer and soft drinks producer, La Beninoise, which had experienced serious production and quality problems, was privatized in 1992 and is now named Sobebra. BOAB participated in a package including asset purchase and financial restructuring. As noted, following the 1994 devaluation, BOAB underwrote Benin’s first corporate debenture issue for Sobebra.

There are other institution-building aspects. For example, BOAB is financing exporting companies, notably in the cotton sector, by far Benin’s major formal foreign exchange earner. This support focuses on the activities of Sonapra, the state company which buys, processes and markets cotton. BOAB also helps to finance newly permitted private cotton ginning plants and is participating in the financial restructuring of COTEB, Benin’s major textile plant, which employs 550 in the provincial town of Parakou, moving the enterprise toward majority private ownership. Cotton output increased from a low of 14,000 tons during the 1970s to about 330,000 tons expected this year.

BOAB also extends credit to Benin’s expanding pineapple export business.

BOAB pioneered the expansion of a Beninese commercial bank’s client base to individual (often
one-person) business people as well as to very small businesses. This entails a great deal of counseling and technical assistance on the part of BOAB staff and represents a major resource commitment. Interviews with some of BOAB’s small and medium enterprise borrowers convey a flavor of the variety of experiences among BOAB’s clientele and help to add a human dimension to the analysis of development impact (see Box 1 at the end of this chapter).

BOAB extends investment credits along with several donor-supported institutions:

- Cepepe, which helps would-be entrepreneurs with feasibility studies and follow-up technical assistance
- Fobape, which guarantees up to 50 percent of some investment credits
- PAPME, an IDA-supported credit program
- PADME, which caters to microenterprises
- Campus-Benin, which guarantees up to 30 percent of some microenterprise credits.

Altogether BOAB participates in financing some 75 investment credits to small and medium-sized enterprises (SME) and microenterprises. BOAB also extends short-term credits to more than 200 SMEs and microenterprises; these credits require intensive supervision because most hinge on the fortunes of a single individual. In the words of BOAB’s general manager, “this is the bank’s market.” Small-scale borrowers cover a broad range of activities including trading in the markets. small construction firms, metal working, printing, a beauty parlor, soap manufacturing and transport. BOAB’s clients also include private primary schools and clinics. BOAB’s strategy has encouraged competing banks to venture into lending to small enterprises.

**Conclusion**

According to BOAB’s general manager, IFC’s presence on the board of directors has been critical to the bank’s success. It confers enhanced credibility, moral support for innovative initiatives and a respected external frame of reference as to how banks should be run, all of which have helped BOAB’s profitability and growth.

One way to conceptualize IFC’s and BOAB’s contributions to development is by reference to recent institutional economics literature that focuses on the notion of credibility. Difficult and volatile institutional environments are usually characterized by low credibility in terms of security and the predictability of formal and informal rule-making and enforcement, as well as high transaction costs. In such business environments a nexus formed among credible institutions such as IFC and BOAB and small firms and individuals can play a decisive role in encouraging the emergence of viable businesses. Such a nexus gives small businesses the chance to test their own credibility in the market and hence opens up new development potential. This is what has happened in Benin, where many of BOAB’s small business clients are expanding their businesses. IFC’s development impact consists partly in strengthening credible firms around which other viable enterprises can develop. This gradual improvement in the business climate is reflected in Benin’s private investment, the share of which has risen from 6.8 percent of GDP in 1990 to 9.2 percent in 1995, a trend interrupted only in 1994 owing to the devaluation of the CFA franc. This is still a modest level (private sector investment represents about 20 percent of GDP in East Asia, and averages 14 percent in Latin America) but the rising trend is a most welcome indication.

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12 In Benin the term “microenterprise” usually refers to informal sector activities, whereas “small enterprise” refers to firms in the formal sector.

13 See, for example, Borner S. A. Brunetti; and B. Weder. *Political Credibility and Economic Development* (New York: St. Martin’s Press, 1995).
Box 1. Thumbnail Sketches of Some of Bank of Africa–Benin’s SME Borrowers

Mr. B., of Cotonou, is 30 years old and earned his baccalauréat in 1984. His parents are farmers. Having lived in and traded with Nigeria, he started a small shop in 1987, using his US$140 in savings to buy a typewriter and a copying machine. He opened an account with BOAB soon after it was established and began a word processing and copying business. He obtained a US$40,000 investment credit from the bank and expanded his business into printing and manufacturing stationery and school notebooks. He is currently expanding again, having purchased modern 4-color offset printing equipment from India, and is selling in Benin, Niger, Togo and Burkina Faso. He employs 40 permanent workers including female computer technicians who were trained in private vocational establishments. Next, he plans to explore the possibility of exporting to Nigeria. Mr. B. owns BOAB shares, which have more than doubled in value from CFA5,000 to 12,000 since he bought them.

Mr. G., of Cotonou, studied literature and law. In 1980 he started a trading firm in the informal sector, selling jewelry and foodstuffs, later also construction materials. He then established a formal sector firm which now employs 25 mostly professional staff (up from 7 in 1988). The firm, whose assess have increased to US$1.6 million, is diversifying its activities into pineapple and yam production. Mr. G.’s main need is for a foreign marketing partner interested in agricultural exports. He is a BOAB shareholder and is using the bank’s trade credit.

Ms. P., of Parakou sells goods. She started in 1976 with US$65 and expanded her business gradually. Today she sells flour, canned food, batteries, liquor and other consumer goods. Her turnover exceeds US$1 million. According to her, she would have been unable to expand without a BOAB credit line of US$30,000. She has received lots of advice from BOAB’s Parakou branch about the best product mix she should trade in. An environmental footnote: rather than using chemicals to keep her flour stock from being damaged by rodents, she relies on cats—who are doing a good job of it.

Mr. G., of Cotonou, tells an unfortunate story. Having started in the construction business in Abidjan, Côte d’Ivoire, he moved back to Benin in 1990. After combining his savings with a US$18,000 credit line from BOAB, he began manufacturing soap in 1992. After a period of rapid expansion he fell on hard times. His manufacturing process and consumer tastes required him to buy his main input, palm oil, from a Beninese state enterprise that was mired in deep trouble. Its top executive is being sought for having left the country with company funds. The oil palm plant has been inoperable for some time now. First Mr. G. tried to buy palm oil in Côte d’Ivoire, but the amounts he required were too small in a strong market of big buyers. He managed to obtain one truckful but extortion on the way back to Cotonou made the shipment unprofitable. Soap output has ceased and seven out of twelve workers were laid off. Mr. G. is exploring ways to revive production, investigating whether he could use palm oil bought from villages. This requires a chemical process that remains to be developed. Meanwhile he is servicing his loan with help from the family’s construction business.

Ms. D., Cotonou worked from 1977 to 1991 as an employee at a supermarket. She worked, in succession, as a secretary, cashier, in personnel, accounting and lastly port shipments. During lunch breaks and after working hours, she ran a market stall with the help of a cousin. In 1992 she applied for a BOAB loan on a Friday, expecting a friend’s guarantee as collateral. Next Monday it turned out that her friend had decided against this. She then offered BOAB her house and inventory as collateral. BOAB’s credit director tried to dissuade her, pointing out the risks she would be running of losing her house and livelihood, but in the end the deal was clinched. Her decision proved to have been the right one. Today she employs three persons, is building a new house, is trading in flour, sugar and rice, using a US$70,000 BOAB credit line, and re-exporting to Nigeria.
4. Aquaculture de la Mahajamba

by I. Karmokolias

Aquaculture de Mahajamba (Aqualma) is a company created to produce and process shrimp in a remote area of Madagascar. Aqualma is 73 percent owned by a Malagasy company whose main activity is to fish and process wild shrimp off the coast of Madagascar. IFC owns close to 5 percent of the shares.

Aqualma's facilities include a hatchery, a 675 hectare (ha) shrimp farm and a processing plant. Shrimp production in 1996 is estimated at about 2,350 tons. Most of the catch is exported to Western Europe, and the remainder to Japan.

The project has had a significant developmental impact on both the regional and national economy. Although the project would have had a positive impact anywhere, this is especially true in Madagascar, which has few modern production facilities. In the
Mahajamba area, where the shrimp farm and processing factory are located, the only other economic activity is subsistence agriculture.

Benefits include improved natural resource management; innovation and technology transfer; significant forward and backward linkages; employment; skills development; income generation and poverty reduction; a positive, although small, fiscal impact; substantial foreign exchange earnings; infrastructure improvements; and private sector development. Aqualma is planning to expand operations which will result in even greater benefits, particularly those to be generated by new supplier companies to the company.

So far the project has had minimal negative impact. Environmental effects have included the discharge of wastewater from the ponds and the processing plant, as well as the cutting of trees during construction. However, the amounts of wastewater are small enough to allow absorption by the ecosystem without lasting harmful effects; and for the few trees that were cut down, the company has more than compensated by creating a 50 ha forest reserve.

There is potential, however, for significant damage both to project operations and to the area’s social and ecological systems. This stems from the rapid growth of the village adjacent to the farm that was created to house company laborers. Its population has been growing rapidly as dependents, new families, merchants, prospective employees and others have settled there. The total absence of any institutional and physical infrastructure creates a great risk for social disorder, spread of disease and ecological damage that could spell disaster for the project.

The company is taking some steps to provide elementary health care and education facilities, but has neither the authority nor the resources to assume responsibility for administration of the village. At the same time, the government’s resources and capabilities are limited and, it could be argued, are needed more urgently elsewhere. How these issues will be resolved is not currently clear.

**Background**

**T' Country**

The world’s fourth largest island, Madagascar is located in the southwestern Indian Ocean and is separated from the African mainland by the 250-mile-wide Mozambique Channel. The country has a rugged topography, a wide range of soil types, rich mineral reserves and unique flora and fauna, which have suffered greatly in recent years from environmental degradation.

Madagascar’s population is about 13 million, 95 percent of whom are Malagasy people of different tribes; the balance consists mainly of foreign communities of Indians, Pakistanis and Chinese. Urban areas along the eastern seaboard and at the highland capital of Antananarivo are densely populated, in contrast to most rural areas, where density is low. The population is growing rapidly at an average rate of 2.8 percent in recent years.

Socioeconomic conditions have deteriorated over the years. About 75 percent of the people now live in poverty, as compared to 43 percent in the 1960s. The public health and education systems are inadequate and inefficient. Life expectancy is about 50 years, child mortality is high, malaria is a major health problem and the incidence of tuberculosis and other communicable diseases is increasing. In some areas, 40 percent of the population suffers from malnutrition and the illiteracy rate has risen.

Infrastructure is limited. Telecommunications are difficult, the transport network is inadequate and power is dependent on oil imports and, to a limited extent, on hydroelectricity. However, most people use charcoal for energy, a practice that has greatly contributed to the country’s deforestation and environmental degradation.

Recent economic performance has been poor. After stagnating in 1994, GDP grew by 2 percent in 1995, still less than population growth. The budget deficit and inflation fell but remained high at 9 percent of GDP and 39 percent, respectively. Foreign debt is
Currently about 140 percent of GDP and the current account and trade balances have been deteriorating. The government’s policies have been less than sound and ongoing political bickering at high levels has prevented the consensus necessary to adopt and implement a comprehensive reform program.

Madagascar’s economy is based on agriculture, which accounts for about one-third of GDP and nearly 60 percent of export earnings. The staple food crops are rice and cassava, along with maize, bananas and sweet potatoes, mostly produced in small, subsistence-oriented farms. The main cash crops grown for export are coffee, vanilla and cloves.

Industry, mostly food processing, accounts for about 14 percent of GNP, while mining and energy together account for an additional 23 percent. Manufacturing has shown some vitality recently due in large part to the success of the Export Processing Zones, which at the end of 1993 accounted for some 370 enterprises concentrated in the textile sector.

The fishing industry is important to the local economy. The total catch in 1995 was an estimated 120,000 tons. The value of fish exports grew by about 50 percent between 1993 and 1995, and amounted to an estimated US$107 million in the latter year. Shrimp accounts for about half of total fish exports, and is the country’s third most important export commodity after coffee and vanilla. Madagascar has the potential to benefit considerably more from fishing; currently only about one-third of the estimated offshore catch is landed locally; the balance is taken by Japanese, Russian and European fleets that operate in the same offshore waters. Some signs of overfishing have emerged in the shrimp sector, where many open-sea shrimp fishermen exceed the limit recommended by the United Nations Food and Agriculture Organization (FAO) in 1994. Because of over-fishing or other factors, the 1995 shrimp catch was 33 percent smaller than that of 1994—6,400 tons and 7,700 tons, respectively. The best prospects for the industry appear to rest with an expansion of inshore shrimp farming, which is estimated to have the potential to treble the country’s current export receipts from shrimp.

The Aqualma shrimp farm is near the town of Besakoa, which is some 40 km inland from the provincial capital of Mahajanga, also known as Majunga. With a population of about 150,000, Majunga is the second largest city in the country after the highland capital, Antananarivo. The area immediately outside Majunga is relatively uninhabited and totally lacking in infrastructure. Although a road connects Majunga to the capital, Besakoa’s formal link to Majunga is an airfield originally constructed by an oil company but now owned by the project group. The rural economy is based on subsistence agriculture, but there are some commercial farms near Majunga. Majunga’s economy relies on port operations, textile and food processing facilities and service and trade establishments. Majunga’s port is home to a number of fishing vessels and is the area’s center for international commerce.

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The Project

Pecheries de Nosy Be (PNB), a well-established shrimp-fishing company in Madagascar, is the local sponsor of the project. PNB is owned by Groupe Socota Agro-Alimentaire S.A., a Luxembourg-based holding company in turn owned by the Ismail family of Madagascar. Socota’s main activities are textile mills in Madagascar and Mauritius, shrimp fishing and shrimp farming. The Aqualma shrimp farming company is 73 percent owned by PNB and 18 percent by Socota.

The foreign technical sponsor of the project, responsible mainly for technical assistance, was until recently Cofrepeche (formerly France Aquaculture), a leading French aquaculture research and management firm. Cofrepeche was, at the time that it ceased operations, retained on a performance-linked technical assistance contract. Aside from
responsibility for the technical management of the overall project. Cofrepeche was also responsible for managing hatchery operations. Aqualma now contracts technical assistance personnel independently, in essence retaining former Cofrepeche staff. IFC has a small equity holding: 7.5 percent of the shares.

The management team was assembled by PNB. General management and marketing services are provided under contract by Iproma, the Ismail family’s management company. The core management team includes staff from PNB, Cofrepeche, and Iproma.

PNB was established to fish shrimp in the coastal waters of Madagascar and process it for export. As more boats from other countries started fishing the same waters, the increased competition and its eventual impact on the shrimp population led PNB to preliminary discussions of possible shrimp farming as early as 1981. Nothing concrete happened until 1986 when FAO conducted a survey to identify and evaluate possible shrimp farming sites in Madagascar. PNB assisted FAO with the survey by providing information and logistical support. One of the sites identified in the survey was Nosy Be, an island near the northwestern coast of Madagascar, where PNB operated a shrimp processing plant. This site was subsequently selected for the establishment of a pilot farm sponsored by FAO, the government of Madagascar and PNB.

The objective of the pilot farm was to assess the viability of a large-scale commercial shrimp aquaculture to raise any of three types of shrimp present in the waters off Madagascar. The pilot farm comprised 7 ha of ponds, of which 4 ha were devoted to intensive (high-density shrimp population), 2 ha to semi-intensive, and 1 ha to extensive aquaculture. The pilot farm was operated from 1989 until 1993. Early results were well above expectations. It soon became apparent that commercial shrimp farming, especially its semi-intensive variant, could be successfully undertaken in Madagascar.

Encouraged by the early results of the pilot operation, the company started looking in late 1989 for a suitable site for a commercial operation. This was not an easy task in view of the large number of prerequisites that needed to be satisfied, including:

- Low to medium water salinity
- Sufficient supply of oxygen in the water
- Absence of mangroves
- Low or no risk of flooding
- Protection from rising seas in case of storms
- Accessibility
- Sufficient size (minimum of 400 ha and preferably 600-800 ha).

The company was guided by the findings of the FAO survey with which it had been closely involved and, perhaps most importantly, by its experience in shrimp fishing. The company reasoned that wherever catches of wild shrimp had been traditionally good—and PNB was very knowledgeable about this—conditions, especially water characteristics, would also favor shrimp aquaculture.

The company’s first choice was a site in Northern Madagascar in a remote area near Ambilobe. The site had most of the attributes that PNB was seeking and was relatively close to its operations in Nosy Be. PNB sought permission from the local leaders to develop the farm there as a prerequisite to starting negotiations with the government to lease the land. Whereas a quick and positive outcome had been expected, discussions actually continued for many months and ultimately the company’s request was denied. The local leaders were worried about the influx of non-local workers, who would certainly be attracted by employment prospects at the shrimp farm.
After considering several alternative sites, the company settled on the current location, even though there was some apprehension over the site's susceptibility to tidal flooding and the existence of some mangroves. The same area had been the site of a French-sponsored project for the commercial production of manioc, and the local inhabitants were used to the presence of foreigners and people from other parts of Madagascar. Permission by the local leaders was granted, clearing the way for negotiations with the government. It took about two years to negotiate the lease on 4,000 ha for 49 years, with the option to extend it for an additional 50 years.

In the meantime Aqualma had been established to implement the project. A multinational management team was recruited, including a Malagasy CEO, a French resident of Madagascar, an Indian production manager, an American construction manager, and a French hatchery manager. While negotiations for the site were going on, Aqualma staff visited shrimp farms in Asia and Latin America to learn about possible farm designs and production methods.

Although the company was planning to start with a farm of 400 ha, IFC, which had been approached as a possible financier, recommended that the farm area be increased to about 700 ha to fully realize economies of scale. Initially the company started with 10 ha on a pilot basis. This decision was only partly based on the need to test the waters. A much more important factor was political instability, which made the company decide against a large investment. A few months later the situation stabilized sufficiently to allow the company to proceed with the construction of a large-scale farm.

It is literally true that the farm was made from scratch. In April 1991, when construction started, the only infrastructure present consisted of foot paths; scattered huts built by local inhabitants living on subsistence farming and fishing; and an abandoned, dilapidated warehouse from the earlier manioc project. The site was accessible only from the sea using landing ferries or small boats. Construction equipment was ferried in, engineers and supervisory personnel lived in trailers and construction labor lived in huts. By October 1991 the first ponds were operational, and the first harvest was realized in January 1992.

Success in constructing the ponds combined with the early high yields to persuade the company to push ahead with construction, and 200 ha were completed by the end of 1992. The plan at the time was to add 200 ha in 1993, but Aqualma decided to expand by 400 ha. At that stage Aqualma requested additional funds from IFC and from the European Investment Bank (EIB). Although both institutions agreed in principle, they decided to wait until after that season's harvest to finalize the agreements and disburse the funds. The delay forced the company to resort to short-term, and expensive, bridge financing to continue its construction program. At present, total pond area is 675 ha, with plans to expand further to about 900 ha by the end of 1997.

The processing plant was originally scheduled to be located on the farm site. Subsequent soil analysis showed that swampy characteristics would have made construction difficult and the plant would actually be resting on floating pylons. Aqualma considered Majunga and Nosy Be as alternative sites but subsequently dismissed both. The reason was that the market segment that the project was aiming for would not accept shrimp that would be frozen at the farm, thawed for processing and refrozen for export. Finally it was decided to locate the plant adjacent to the farm, on high dry land, where the remains of the manioc project warehouse still stood. Since the farm would be much larger than originally envisaged, plant size was increased accordingly. The original plan was for an 800 m² plant but the actual plant is 2,000 m². The new plant can handle the output of the larger farm and process the shrimp into a greater variety of products.
**Project Operation**

Project facilities consist of:

- The hatchery in Nosy Be adjacent to the FAO pilot farm, currently leased from the government and used as an experimental site
- The shrimp farm in the Bay of Mahajamba
- The processing factory adjacent to the shrimp farm
- An area of about 200 ha available for workers' housing and for a 50 ha forest preserve.

The company's offices are located in Majunga.

Aqualma is vertically integrated. Operations range from selecting breeder stock and spawning to exporting fully processed and packaged shrimp. A total of 3,000 male and 2,000 female shrimp per year are selected for breeder stock. Most broodstock, about 80 percent, comes from wild shrimp caught by PNB vessels. During the March to May off-season, broodstock is selected from the farm. Average fertility is about 870,000 eggs per spawn, 900,000 for wild shrimp but only 600,000 for farm shrimp. Only one or two spawns per female are taken and if any lot of newborn has a survival rate of less than 50 percent the lot is rejected. After spawning, the offspring are kept in nurseries through the post-larva (PL) stage, a total period of about three weeks, and the baby shrimp are subsequently transported by plane to the farm in Mahajamba.

The Mahajamba farm is located between the Marovaikely and Masokoenjy rivers in the Besakou area. The site is elongated, about 14 km long and less than 4 km at its widest part. This and the elevated layout of the ponds resulted in 19 out of 82 ponds to discharge into the intake side of the farm thus raising the risk of contamination. The risk is greatly reduced by the high tidal exchange—it can reach up to 4 meters—which flushes the rivers substantially.

The company has adopted a semi-intensive method of farming, i.e., there is no mechanical aeration of the water, and the shrimp population is about 7-8 per m². The low population density reduces the risk of disease development and results in no requirement of antibiotics in the feed. After the PL arrive at the farm from Nosy Be, they are placed in nursery ponds for 24 hours of acclimation and are subsequently transferred to adjacent grow-out ponds. Pond bottoms are sterilized with lime and chlorine and are fertilized with chicken manure before stocking.

Feed is a major cost of the operation and, consequently, the feed conversion ratio (FCR) is all-important and is closely monitored. Feed is broadcast from paddle boats 3-4 times a day. An experiment is underway where feed trays have been installed in some ponds. The uptake is continuously monitored to determine the times during which the animals feed in an effort to improve the FCR.

Water exchange in the ponds is 12-14 percent per day, somewhat less than the 16-18 percent per day that the company would prefer. The exchange is limited by the water pumping capacity. Dissolved oxygen is monitored 4 times daily to ensure that it does not fall below the minimum of 5 percent. If it does, the water is exchanged earlier than scheduled.

Shrimp are harvested twice a year and are immediately transported to the plant for processing and packaging. The plant is very modern, well-designed and well constructed. Processed shrimp meet all European Union and Japanese health standards. The plant currently operates two shifts per day for 48 weeks, with 15-day shutdowns in July and December. Capacity is 10 tons per day which, at the current schedule, translates to 2,680 tons per year. To satisfy the demand of different market segments, shrimp is processed and packaged in a variety of ways, including with or without the shell, with or without the head, cooked or raw; and packaged in several weights. About 76 percent of the output is sold as “head-on-raw” shrimp. This produces relatively little solid waste and the overall process results in well diluted liquid effluent. Most solid
waste is recycled as feed and some is given to artisanal fishermen to use as bait.

After processing, the shrimp are packed in ice and transported by boat to Majunga, from where they are exported in refrigerated ships. All marketing is the responsibility of a distributor based in France. About 90 percent is sold to wholesalers in France, Spain and Italy. About 70 tons were recently exported to Japan. They were well received, so the projection is for exports to Japan to reach nearly 400 tons during 1996.

Project Performance

In 1994 Aqualma suffered a loss of US$5 million on production of 408 tons. In 1995, with full production of 1,535 tons from 440 ha of ponds, the loss was reduced to US$1.47 million. In 1996, with 675 ha of ponds in operation, production is expected to reach 2,340 tons and income, before tax, of US$990,000.

The project has been burdened with higher costs than had been predicted. Projected construction costs and actual construction costs are not easily comparable because the scale of the farm changed, and because the processing plant was ultimately located at a different site and was larger than had been planned. Phase I, construction of 400 ha of ponds, was budgeted at US$19 million but actual cost escalated to US$26 million. The overrun was primarily the result of the following factors:

1. Logistical problems, such as the remote location of the farm site and the total absence of infrastructure, were underestimated.

2. Civil works equipment originally purchased by the company was unsuitable for the muddy terrain at the site and had to be replaced by low ground pressure equipment (construction was shortly thereafter contracted out).

3. Because of these conditions, productivity during construction was lower than expected.

4. Local inflation surged to about 20 percent during the construction period.

Phase II construction costs were more or less in line with projections. One indicator of the difficulties presented by the remoteness of the site, the absence of infrastructure, and the importance of site-specific experience, is that construction of the first 400 ha cost about US$25 million, or US$62,500/ha, whereas the subsequent 200 ha cost about US$6.5 million or US$32,500/ha.

Operating costs have been higher than projected—US$5.35/kg in 1995 compared to the US$3.94/kg estimated during appraisal—primarily because of unanticipated increases of feed prices and because the company had to borrow at high interest rates until funds from IFC and EIB were disbursed. Another factor was the relative inexperience of the company in shrimp farming in Madagascar. Although members of the management team had a lot of experience elsewhere, it took time for optimal teamwork efficiency to develop and for them to adapt their knowledge to local conditions. For example, feeding schedules and quantities were not optimal at the beginning, pond fertilization was incomplete and delays in completing the processing plant necessitated delayed harvesting which in turn negatively affected the FCR. Fortunately, higher shrimp prices have enabled Aqualma to compensate for the higher costs, most of the short-term loans have by now been repaid and the increase in pond area has brought down fixed unit costs.

Overall performance to date has been satisfactory. It is expected to improve further as the larger farm brings about economies of scale and management continues to gain experience with conditions peculiar to Mahajamba. Although projections call for a 1996 pre-tax income of about US$1 million, the recent surge in prices could push it up to US$2.4 million.
Project Rationale and IFC’s Role

The project supports the World Bank Group’s strategy for Madagascar, which focuses on (1) promotion of exports, (2) support to the private sector, and (3) improved resource management.

Until the project became operational, all shrimp exports came from offshore fishing, pushing the catch to its maximum sustainable yield as determined by FAO. The project relieves the pressure by making recourse to onshore shrimp farming an alternative to offshore fishing. In addition, shrimp farming has several positive attributes for Madagascar. It allows shrimp production to take place almost all year round; shrimp production can be oriented toward specific market requirements and customer specifications as to size and variety; and the project serves to further one aspect of Madagascar’s development strategy which is to diversify the commodity composition of its exports.

IFC’s participation provided critical support to the project in the following ways:

- The Corporation provided long-term foreign exchange financing that was not otherwise available in Madagascar. The country has been chronically short of foreign exchange, a situation exacerbated at the time of project preparation because of political instability. Of the total investment cost of about US$33 million, IFC provided US$5.8 million in loans and US$772,000 in equity (7.5 percent of the shares), or 20 percent of the total investment.

- IFC played a catalytic role in mobilizing long-term funds from other investors who coordinated their appraisals with IFC. As company officials acknowledged, IFC’s appraisal was the basis for decision-making by the other lenders who often followed IFC’s lead.

- IFC staff were instrumental in advising the company and in arranging visits to “good” shrimp farms that should be emulated and to “bad” shrimp farms whose practices should be avoided. The knowledge acquired during these visits was critical in selecting the semi-intensive farming method. IFC also contributed technical assistance through a consultant who devised procedures to develop a better pond layout, improve the FCR and lower the risk of viral infection in the broodstock. The company has been especially appreciative of IFC for the technical advice.

- IFC staff met with local environmental authorities to advise on drafting a master plan for the sustainable development of the Mahajamba estuary and the preparation of a regulatory framework for aquaculture in Madagascar.

The company was critical of the length of time it took IFC to reach a decision and, once a decision was made, for disbursements to start. IFC and EIB disbursements were on a pari passu basis and the company felt that it took these institutions, especially their legal departments, an excessive amount of time to develop a coordinated approach. This was costly because, as stated earlier, the company had to borrow short-term to continue construction until funds were disbursed. The delay in proceeding with the first disbursement resulted from complexities arising from the different types of subordination in the first and second EIB loans. EIB legal staff indicated to IFC that, after realizing the complexities created by their loan structure in this transaction, they would examine different approaches to try to avoid such difficulties in the future.

Development Impact

The project can help ease the pressure on wild shrimp from overfishing. Shrimp fishing in Madagascar’s waters has been practiced on an artisanal and industrial basis for many years. Recently the number of fishing vessels has increased, putting increasing pressure on the shrimp
population. Although there is no guarantee that the wild shrimp resource will be properly managed thereafter, commercial on-farm production and corresponding export receipts should make it easier for the government to insist that fishing regulations be respected and to improve enforcement. Otherwise the results could be disastrous, as demonstrated by the situation in the South Pacific, where scarcity of wild shrimp recently drove the price of one female breeder shrimp to over US$1,000.

Innovation

Mahajamba is the first shrimp farm in Madagascar and the first in the world to adopt a semi-intensive method on such a large scale for tiger shrimp. The project has amply demonstrated the financial and technical feasibility of this type of venture. Already, the government has received several requests from local and foreign investors to launch similar projects. One, backed by French sponsors, is in the preliminary design stage and will most likely materialize soon.

Aqualma will provide PL shrimp to the new farm, a mutually beneficial arrangement for both companies. In this way, Aqualma will better utilize its hatchery and, through higher volumes, achieve economies of scale, while the new project will be able to forego the risk and expense of breeding.

Linkages

The project has generated many linkages both during the construction and operational phases, and has helped supplier firms develop. Most of the construction of the ponds and of the processing plant was subcontracted to local companies. One indicator of the economic activity generated is that the main contractor, who owned 5 bulldozers prior to project start-up, now owns 20 bulldozers and other heavy equipment, has expanded his business throughout Madagascar and currently is looking to win contracts both in Madagascar and in nearby countries. On average, about 300 workers were employed full-time during the construction period.

Now that operations are in full swing, the company buys 40 tons of lime per month from a local supplier, sizable quantities of chicken manure to fertilize the ponds, and food for the workers, including more than half a ton of beef per month, rice, vegetables and other items. A negative aspect, albeit for a brief period, was that Aqualma’s food purchases drove local food prices sky-high until the market adjusted and prices dropped to normal levels. In total, local purchases are estimated at US$250,000 per month, of which about half is for fuel (which is imported).

The project has led, directly or indirectly, to the establishment or promotion of artisanal industries in the area such as the construction of flat bottom boats used in the ponds, mosquito nets for project personnel and their families and some retail shops catering to the work force and their dependents.

The Nosy Be hatchery also generates linkages, including supplies and feed, mostly fresh seafood bought from local fishermen.

Local transport services have received a major boost. Project-related imports, (feed, packaging material) and exports (shrimp) represent about 50 percent of the activity of the port of Majunga, resulting in significant earnings for the transport companies, the port authority and the stevedores. Also, the company is leasing airplanes for transporting PL from the hatchery to the farm and to connect the farm to Majunga on a daily basis.

In addition, two major undertakings are in the planning stage. Testing is underway to see whether local ingredients could at least partially substitute for imported feed. Early results indicate that a combination of imported and local nutrients, mainly cotton cake and rice, will be appropriate. The second undertaking involves the local supply of packaging material. Although Aqualma has some reservations about the quality of the local product, they are willing to work with the sponsor of that project to ensure that any difficulties will be overcome. Both these projects would result in substantial foreign exchange savings for the country.
Employment

Aqualma employs 969 persons, of whom 850 are full-time permanent employees. Of these, 581 workers are employed on the farm, 353 at the processing plant, and 35 in the hatchery. Eleven are foreigners.

Incomes

The company payroll amounts to US$1.3 million per year, of which US$200,000 is paid to personnel in the administrative offices and US$1.1 million to workers in the farm, plant and hatchery. Production workers are paid the equivalent of US$2 per day, as compared to a minimum wage of US$1.20 per day, which is what most unskilled workers usually earn. An additional US$450,000 is spent annually to provide meals for company personnel.

Skills Development

The company is cooperating with FAO in training biologists specializing in shrimp aquaculture and has provided training for its laboratory personnel. In addition, many production workers receive on-the-job training while all workers participate in regular sessions to learn about proper health and occupational safety practices.

Fiscal Impact

Aqualma’s direct impact on the national budget has, so far, been small. The project’s contribution to government revenues is limited because it is situated in a free zone and is thus exempt from import taxes and duties. Also, Aqualma is enjoying a 5-year tax holiday and until recently was not making profits. After the tax-holiday period, the company will be liable for a 45 percent income tax. The company pays its share of social security tax and withholds income tax on employees’ wages and salaries, which are then transferred to the government. This is estimated to be about US$270,000 annually. Aqualma has not benefited from any government expenditure, as the latter has not provided any infrastructure or other services to the company or to its employees.

Foreign Exchange

As production and exports have increased, so have foreign exchange earnings, from US$2.53 million in 1994 to a projected US$16.25 million in 1996. At the same time, the company spends significant foreign exchange, an estimated US$7.5 million in 1996, on imports. Thus, the net foreign exchange earnings for this year amount to US$8.75 million. Feed accounts for most of the foreign exchange outflow, US$4.8 million or 64 percent of the total in 1996. Once the new feed mill is in operation, mixing imported with local ingredients, it is projected that the bill for imported feed will be reduced to about half its present amount.

Social Impacts and Standards of Living

The project has had a profound impact on the lives of its employees. For the majority of them it was their first systematic involvement in a modern economic system. At least 80 percent of the workers had never had a wage-paying job before. In addition to the wages, the company provided plots and houses for the first batch of employees recruited in Nosy Be for work at the Mahajamba farm. Those hired later have been assigned plots on company-leased land where they have built their homes. All workers receive free meals at work.

Employment opportunities and, to a lesser extent, the prospect of employment have attracted people from many parts of the country to the site. The result has been the creation of a village which now numbers about 3,000 persons, expected to grow to about 5,000 within a year or two. This has had both positive and negative aspects. On the positive side, the project has generated substantial employment and income that have had a multiplier effect, as illustrated by the development of various business activities such as a hostel and small retail stores. Negative aspects include pressures on the social and physical environment. The village, having sprung up and grown rapidly virtually from the bush, lacks both administrative and physical infrastructure. The company is addressing two of the many needs, namely, community health and
The clinic is in the final stages of construction to provide basic health care, maternity services, medicine and education in disease prevention. Workers and their families will receive these services free of charge, local inhabitants will pay for medicine and a minimal fee for the physician and those from outside the area will pay full cost. Land adjacent to the village has been set aside for the construction of an elementary school, which should be ready within a few months.

The village population is an agglomeration of people from different parts of Madagascar with different customs and traditions. Although this has caused occasional friction it has, for the most part, been a successful experiment in peaceful coexistence.

Institutional Development

The shrimp farm is the largest private sector investment to materialize in the country in many years. Its success has demonstrated to local and expatriate entrepreneurs the feasibility of large-scale private projects in Madagascar. It has also demonstrated to the government the important role that the private sector can play in the country’s development. In addition to the tangible benefits generated by the project, e.g., jobs, backward and forward linkages, and foreign exchange earnings the project has been a source of pride for many Malagasy people who hear of visitors from different countries wishing to learn from Aqualma’s experience.

Infrastructure

The project’s contribution to infrastructure development in the Mahajamba region has included about US$1.6 million worth of roads, utilities, communications, housing and amenities in the vicinity of the project. Moreover, at the national level, the project has been partly responsible for the initial steps toward the formation of a regulatory policy for the aquaculture industry—which, as noted above, is a process to which IFC has contributed.

The site had no infrastructure when the project started. All equipment came in by landing craft. Since then, an airstrip has been constructed, the landing has been improved, and a small road network is in place around the farm and between the plant, the farm, and living quarters. As described earlier, workers recruited in Nosy Be and brought to Mahajamba were given plots and houses, construction of a clinic is nearly complete and a school is in the planning stage.

Environmental considerations are critical to the commercial success of the project, quite apart from any ecological externalities that may influence the project’s social rate of return. As to commercial success, the project technology pays particular attention to the need to protect the environmentally sensitive shrimp growth process from the potentially devastating effects of pollutants and disease. As to the social rate of return, the key environmental issues relating to the project are:

1. Effluent discharge from the shrimp ponds and the hatchery
2. Use of biocide chemicals to control disease problems between harvest and new grow-out activities
3. Possible loss of sensitive coastal resources and habitats such as mangroves.

The project location and design deal effectively with these three issues. The use of semi-intensive farming methods result in effluent discharges of negligible toxicity. Moreover, no chemical treatments are required to reduce risk of disease. The liquid effluents from the hatchery are treated in wastewater ponds that comply with accepted international environmental guidelines. Finally, project location was chosen so that only 3 percent of the mangrove growth on the banks of the surrounding rivers and mud flats is affected by pond discharges. Aqualma is committed to preserving the mangrove and has engaged in a mangrove planting program in areas with sufficient tidal immersion and along man-made internal water
canals to fortify the banks and to encourage biological oxygenation.

Forest resources on the site had been largely destroyed prior to the development of the project, the goal being to clear land for farming or to cull firewood. The few trees that remained were cut down as the ponds were created. The company is compensating for this by establishing a forest on 50 ha of land adjacent to the farm. The forest will provide wood to company employees but the process will be controlled by the company to prevent excessive cutting. In addition, Aqualma is introducing kerosene stoves to its work force to reduce the demand for wood.

Pollution is of major concern to Aqualma. The recent experience of Thailand and Taiwan, China, contains vivid examples of what could happen. The production of Taiwan, China, declined from about 95,000 tons to less than 30,000 because of disease. Thailand’s shrimp industry is leaving in its wake abandoned shrimp farms, decimated mangroves, and micro-ecosystems laden with chemicals and various toxic substances. Both the hatchery at Nosy Be and the farm at Mahajamba utilize sea water pumped in to the ponds and are therefore susceptible to harmful substances that may be in the water. As mentioned above, IFC’s appraisal concluded that project-originating pollution at both the nursery and the farm can be handled by the system, aided in particular by the strong tides prevalent in the area. Operational experience to date has proven this assessment to be correct and pollution from Aqualma operations presents no danger, although the situation should continue to be monitored.

Pollution from external sources is of greater concern at both the hatchery and the farm. Of concern to the hatchery is pesticide run off from sugar cane plantations and the risk posed by an oil terminal serving Nosy Be island, located very near the hatchery. Small oil spills have occurred in the past without contaminating the hatchery ponds. The pesticide danger is more difficult to assess as it may have a cumulative effect which could cause problems before it can be detected.

The farm faces a potentially major problem stemming from the totally unplanned growth of the village near the farm. In the absence of a disposal system all waste is haphazardly dumped either in nearby streams and rivers or on the soil, whence certain substances eventually find their way to the sea. As the population of the village grows, the danger of contamination rises proportionally. The experience of East Asian countries has shown that this presents a real risk with potentially catastrophic consequences. The company is in a quandary. It does not want to undergo the significant expense of providing infrastructure for the village which it believes to be the responsibility of the government. Not only is the expense substantial but if infrastructure is provided, it would attract more people so that the system would quickly be overloaded and the same problems would resurface. On the other hand, the government is short of resources and its priorities are in more densely populated areas with inadequate infrastructure. The company is appealing to multilateral aid agencies such as the German Agency for Technical Cooperation (GTZ), who has already contributed to the construction of the clinic, USAID and others. As of now there are no concrete plans for action and the problem continues to grow with the project facing a potential catastrophe.

Another potential danger lies in the possible introduction of exotic shrimp species in future aquaculture projects, either in Madagascar or nearby countries. Exotic species are capable of introducing bacteria or viruses to which the carriers may be immune but Aqualma’s tiger shrimp may be susceptible. Aqualma has asked the government to develop a set of rules and regulations governing the further development of the shrimp industry in Madagascar. However, even if such a charter is developed, the government may not have the necessary resources to enforce it. There is also the risk that the new charter could be constructed to prevent new companies from entering the field and competing with existing producers. There is currently no evidence that this is the case, especially since the development of a charter is still at the conceptual stage. Nonetheless, care should be taken to ensure that it is not used as a barrier to legitimate competition.
South Pacific Viscose (SPV) is a foreign-owned company that produces viscose (or rayon) staple fiber, using, in large part, imported raw materials. The management skills and technology provided by its parent and technical partner have made the company internationally competitive, which allows the company, and Indonesia, to capture the value-added component of viscose production that would otherwise be lost to imports. That value added is the direct element of the development impact of SPV's operations and its contribution to the Indonesian economy is substantial.

In addition to its direct development effects, SPV has played an important part in the industrialization of the region where the plant is located. This transformation has had a major impact on the lives of inhabitants of the region, both those directly employed as a result of the three SPV
investments that have taken place, and those who have benefited indirectly through the expansion of the service sector that the investment has induced.

This chapter summarizes some of the main effects that SPV has had on the local economy and on the inhabitants of the region. Many, but not all, of those effects are included, at least in part, in the economic rate of return calculations normally prepared for any IFC investment. However, the analysis that reduces the rate of return to a single number hides much of the value of the individual effects.

The Project

Company Background

SPV was formed in 1978 as a joint venture between its main shareholder and technical partner, Lenzing A.G. (Lenzing), and a group of other investors, most of whom were also foreign. The company produces viscose staple fiber, sold internationally for spinning into yarn, which is then woven into cloth for use in the garment industry. Sodium sulfate is produced as a byproduct of viscose production and is sold separately. The company’s sole production facility is located in Purwakarta, West Java, located about 120 kilometers east of Jakarta.

Following its formation, the company began searching for a site in 1980. Essential for its operations were a source of abundant fresh water, electrical power and access to the textile industry. Purwakarta satisfied these needs—spinning companies had set up operations in the area in the 1970s—and, in addition, the government offered tax concessions to induce development of what was then a relatively undeveloped location. At the time, Purwakarta was a remote and largely rural area. Infrastructure was not in place and the company had to develop the road to its plant site before operations could begin.

The initial investment, done without IFC financing, resulted in Line 1, which began operations in 1982 with an initial capacity of 16,000 metric tons per year of viscose staple fiber. Through hard work and additional investment in streamlining production, management was able to push the capacity of Line 1 to 37,000 tons per year, its current capacity.

Growth in the local textile industry and the success achieved with Line 1 induced the company’s management to consider the addition of a second line which would nearly double the plant’s capacity to 72,000 metric tons per year. Initially, the company began work on the expansion using short-term funding from its traditional bank sources. However, as work progressed and the costs started adding up, it became apparent that a different long-term financing plan was needed.

Discussions with IFC began and a loan package of US$45 million (an “A” loan of US$20 million and a “B” loan of US$25 million) was approved by IFC’s Board in 1992. Total project cost at that time was estimated to be US$92 million, with the company providing US$32 million as equity using cash flow generated by existing operations. Working capital loans for US$15 million completed the financial package. Loan disbursement took place in late 1992 and early 1993. Estimated economic rate of return on the project is 14 percent.

Line 2 was finished in line with expected costs and the operating results have been good. Quality improved as a result of the technology employed in Line 2 and ongoing management efforts. As a result, SPV was awarded ISO 9002 certification in 1995, official recognition that its product is considered to be of high international standards. In addition, a total of nearly US$15 million was included in the expansion budget for emission control and treatment equipment, which has reduced the company’s environmental impact and has allowed it to process byproducts into valuable raw materials for its production process.

The success achieved with Line 2 persuaded company management to consider an additional expansion to increase capacity by an additional 50 percent, for a total of 109,000 metric tons per year. Line 3 will employ new technology, including even better control of gaseous emissions and should
result in an even higher quality product. IFC financing was approved by the Board in 1995. Construction is now taking place and operations are expected to begin at year-end 1996. Expected financial and economic rates of return on Line 3 are 17 percent. The increase in the rates of return relative to Line 2 is a result of the economies of scale achieved through the expansion. These economies of scale promise to make the company more internationally competitive, in addition to improving the quality of its product.

Company Sponsors
The major equity holders of the company are foreign. Lenzing A.G. of Austria is the largest shareholder, with 41.98 percent of total equity. Located in Austria, it operates one of the largest viscose plants in the world and is also active in paper, plastics machinery and equipment. Lenzing’s experience in the industry has made it an invaluable technical partner and the source of the SPV management team, which is seconded from Lenzing as part of its management contract. Other major shareholders include Avit Investments Ltd. (Turks and Caicos Island, BNI, 31.18 percent), Penique S.A. (Panama, 11.97 percent), and P.T. Pura Golden Lion (Indonesia, 11.92 percent).

Company Base: Purwakarta
Purwakarta is a regional center located sufficiently far from Jakarta to be considered economically independent of the capital. When SPV first established its operations there in the early 1980s the area was relatively undeveloped from an industrial point of view. Agriculture was the backbone of the regional economy and infrastructure was generally undeveloped. Since then, government policy and other factors have resulted in a substantial amount of industrialization in the region. As a result, the economic base has switched from agriculture to industry.

The region of Purwakarta has a population of nearly 600,000, an increase of 50 percent since 1980 as a result of the country’s high population growth rate and immigration attracted by the industrialization that has taken place. Approximately 100 companies are now located in the region, with an emphasis on the textile industry, but other industries are also present. In total about 48,000 workers are employed by industry. Given the total population, that implies that each industrial job provides for more than 12 individuals, either directly or indirectly. Alternatively, each industrial job in the region is estimated to provide indirect employment for an additional 1.5 workers outside of the industrial sector.

The Product and the Market
Rayon, now commonly called viscose, was the original man-made fiber and was introduced in the first decade of the twentieth century. It is widely used in a variety of applications, but the viscose staple fiber produced by SPV is sold almost entirely for use in the textile industry, which values viscose for its properties that make it, in many ways, superior to both cotton and other synthetics.

Despite the fact that it is man-made, viscose is actually a natural fiber based on cellulose. The primary raw material used in its manufacture is pulp, a wood product that is sourced internationally, then dissolved and extruded into spinbath to produce a continuous fiber. This fiber is then finished and cut to the length needed for spinning into yarn and then finished. The fiber is similar in feel and comfort to cotton, but has superior spinning and dyeing performance. Viscose can be used alone or blended with other fibers in the spinning process.

Despite its notable attributes, viscose is somewhat more costly than either cotton or polyester and, as a result, it has only about a 4 percent share of the fiber market globally. Within Indonesia, however, viscose consumption has increased strongly in recent years, climbing to 16.4 percent of total fiber consumed in 1990. The stronger Indonesian demand arises at least in part from the fact that the country has no indigenous cotton production, which makes locally produced viscose relatively more attractive than in many countries.

There are three Indonesian producers of viscose staple fiber. Total 1995 Indonesian production was 200,000 metric tons, of which SPV contributed
72,000 tons, or 37 percent. Globally, Indonesia is the second largest producer of viscose fiber, with only China producing more. But Indonesian demand exceeds local supply and imports of 15,000 tons were required in 1993. Expected increases in Indonesian production should soon eliminate the need to import and result in increasing levels of direct exports of viscose fiber.

SPV sales in 1995 were about US$150 million, of which 86 percent was in the Indonesian market. The major direct export markets were Pakistan and India, but much of SPV’s production is exported indirectly in the form of yarn, cloth and garments. Although accurate figures are difficult to obtain, it is estimated that at least 60 percent of Indonesian viscose fiber is exported, and SPV probably exceeds that level.

**Project Performance**

Project performance has been good. Line 2 costs were equal to projections and the project was completed on schedule. Production in 1992 and 1993 was in line with projections, but lower market prices for viscose led to lower total sales than expected. This was offset by lower interest expense, however, with the result that net income exceeded Board report forecasts. Sales and profits have continued to increase in 1994 and 1995 and Line 3 expansion activities are proceeding on schedule.

**Project Rationale and IFC’s Role**

The project supports the World Bank Group’s strategy for Indonesia, which includes the promotion of internationally competitive export-oriented private sector manufacturing companies. The project also supports the Indonesian government’s development strategy of promoting the textile industry and encouraging economic development outside the country’s major urban areas.

IFC’s participation was important in two ways: the Corporation provided long-term debt financing which was otherwise unavailable, and IFC’s presence encouraged the participation of other long-term investors.

**Development Impact**

**Employment, Payroll and Benefits**

SPV currently employs 1,260 local staff and 55 expatriate staff; approximately half the expatriate staff is employed temporarily for the expansion project. Total salary and wages paid to local staff in 1995 was about US$3.3 million. In addition, employees are provided uniforms, shoes, meals, transportation and medical benefits that total an additional US$0.7 million. The company also makes a contribution to the national social security system, which in 1995 was US$0.1 million. In addition, the company has a private pension scheme to which its contribution equals 3.5 percent of the employee’s salary; the employee’s contribution is 1.5 percent.

All employees work 40 hours per week, with opportunity for overtime at substantially higher hourly wages. Workers are represented by a labor union and work under a collective labor agreement. In 1995, SPV received a government award for providing outstanding worker welfare benefits. An example of these benefits include interest free loans for housing.

Housing for workers at the supervisory level and above, who may be needed at the plant on short notice, of whom the majority are Indonesian, is provided free of charge at the plant site. Total original cost of that housing, including related infrastructure, was US$5 million.

In addition to its permanent labor force, the company is currently employing nearly 1,000 additional workers performing the civil works and erection for the expansion project. SPV also employs approximately 350 workers on a contract basis to provide a variety of services, including groundskeeping. In total, it is estimated that SPV
provides employment for approximately 4,000 locals either directly or indirectly, excluding those employed in the construction of Line 3.

SPV wages are, for the most part, well above the required minimum wage and are among the highest paid in the Purwakarta region. Evidence of the desirability of SPV jobs is provided by the fact that turnover in 1995 was only 0.7 percent.

**Human Resource Development**

The viscose industry in Indonesia has a relatively brief history and is dominated by foreign-owned companies. Consequently, there is no large pool of well-trained Indonesian technicians and managers available to the company. Add to that the plant's location distant from any major urban area and the problems of recruiting experienced employees is magnified.

To date, much of the problem in securing local technicians has been dealt with by hiring Indian engineers who come with education and experience gained in the Indian viscose industry, which is both well developed and has a long tradition. Rather than continuing to depend on foreign contract labor, SPV is also investing a considerable amount in the development of local technicians through a training program that it has developed and implemented. A central part of the program is English language training for all higher level staff, for which the company has hired a full-time foreign language trainer. Language training makes communication between company employees and managers easier, and also increases employment opportunities for the workers as most foreign investors in Indonesia give preference to applicants with English language skills.

The technical part of the training program is based on a course designed to provide a technical background in the viscose fiber production process. The program involves 32 weeks of training and includes a series of three examinations. A professional trainer has been employed to teach the class and currently one-third of all employees, not just higher level staff, are targeted to participate with all employees eventually expected to complete the course. Upon completion, the participants will have a strong background in the various chemical and mechanical aspects of the production process.

To promote in-house training generally, the company has employed a retired Lenzing trainer to develop pedagogical skills among 10 of its university graduate employees. Following this training, the students are now better prepared for teaching other employees various technical aspects of the production process, which they are expected to do on a regular basis.

In order to alleviate the shortage of trained local technicians, the company has hired seven Indonesian students, which it chose on the basis of a national examination and interview process. Those students have been sent to a foreign-run training facility near Jakarta, where they are enrolled in technical education programs: four as electricians, three as instrument technicians. The program lasts 2 years, after which the students will have a 5-year contract with SPV. Of course, expectations are to employ these students permanently, but a contract is needed in order to ensure that they are not hired away quickly, which is possible given the education that they will have received. Total cost of the training is about US$46,000.

The company also has additional training programs that are under development and that will commence in the current calendar year. They include a management training program for all department heads; total cost is expected to be about US$300,000, plus lost work time. Also ready for implementation is an in-house program on chemical processes, which will target about 200 operators and supervisors and involve about 1,000 hours of training. Eventually, the company's most expensive training effort could be an ongoing in-house program on advanced general mechanics, for which the company has already invested US$500,000 in facilities and equipment and hired two full-time trainers, with a third trainer expected.

SPV has adopted Microsoft software for its computer needs, but finding office personnel in
Purwakarta with personal computer skills is difficult. For that reason, the company hired a professional trainer and has trained all its office staff in the use of Microsoft products.

In summary, SPV is making a considerable financial investment in the professional training of its local employees. In addition, those employees are benefiting from the direct exposure that they have with Lenzing management and the Indian contract employees. As a result, the company is providing a considerable amount of human capital to the country.

**Linkages**

Viscose production involves the use of several raw materials, most of which are imported at this time. Discussions with a local producer of pulp are currently under way, but until they can meet SPV’s quality and price needs, pulp will continue to be imported.

Despite the importance of imports in the production process, the company still has considerable business contact with local firms. Transport to and from the plant is provided by a local shipping company that has grown over the years with SPV. Given the plant’s current level of activity, about 150 jobs have been created to provide transportation services.

When Line 1 was installed, Indonesian contractors were employed to provide construction services, but nearly all equipment was sourced internationally. After nearly a decade working in the country, however, management developed local contacts and much of the Line 2 capital cost was sourced domestically, in addition to the construction services. Of the total cost of US$92 million, approximately US$30 million was spent domestically, of which US$23 million was for the purchase of capital goods (although some of those were imported) and US$7 million was for construction services. Domestic procurement has continued for Line 3, with US$14 million budgeted for construction costs and US$14 million for domestically-manufactured components. An additional US$11 million in capital costs will be paid to Indian suppliers. This experience suggests that there are advantages to working with a company that is well established in a country, because their experience allows management to establish linkages with other domestic businesses, which helps to reduce the cost of any capital investment, as well as to increase the development impact of the investment.

In addition to its expansion, the company has an ongoing investment program to cover equipment maintenance and repair. Total cost of that program was about US$6 million in 1995, of which about US$2.4 million was spent on local suppliers.

**Industry Effects**

SPV has become an industry leader both locally and internationally. Its product is of the highest quality, the company is cost competitive and an aggressive customer service approach to marketing has been developed. This has had three effects. First, it has forced other domestic producers to be aggressive in improving their quality in order to be competitive. Second, it has allowed domestic spinners to be more competitive internationally both because their quality is high as a result of using SPV fiber, and also their costs are reduced because a location close to suppliers reduces transportation costs. Third, close proximity to clients combined with commitment to service has allowed SPV to work with its clients to overcome technical problems quickly and at low cost.

**Infrastructure**

The company is responsible for the development of the main road linking the plant with central Purwakarta, located about 9 kilometers away. As a result of the growth of the company and the growth of the area more generally, that road has become a central artery in the regional transportation network and is well developed commercially. Still, the company continues to maintain the road, spending US$45,000 last year on road maintenance for what is in fact a public road.
The Line 3 expansion will also include construction of an 8-megawatt power plant, which will be used to supplement the power the company buys from the local utility. There are two reasons for the investment in the captive power plant. First, power from the utility is now in scarce supply. Second, SPV needs to consume large amounts of steam in its production process and it is economical to coproduce that steam with electricity. As a result of coproduction, the company is able to produce power at about one-fourth the cost of power provided by the utility, which will produce savings of US$1.6 million annually for the company. This also represents savings for the country more generally because power utilities do not have the advantage of coproduction and therefore SPV is able to produce its power more efficiently than is the utility.

**Social Impact**

The industrialization that has occurred in Purwakarta in the last 20 years has had a positive social impact. Although SPV alone cannot claim credit for that impact, the company has played an important role in the process because of its position as a central player in the local textile industry, which is in large part responsible for the transformation that has taken place. As a result of the industrial investment in the region, the economy has expanded, with the creation of a large service sector that feeds off of industry. The town now has a number of banks as well as department stores, which it did not have when SPV began its operations.

SPV has had a directly observable positive social impact as well. For its employees, their families and the people living near the plant, SPV has invested about US$1 million in a mosque, a community hall, a medical clinic and a football field. The company also provides financial help to the local school and, through its interest-free loan program, has helped its employees to purchase and improve their own housing.

**Technology Transfer**

For producing viscose fiber and recycling emissions, SPV employs sophisticated equipment imported from various international sources. In addition, the management expertise needed to operate the plant is provided by Lenzing. In that sense, technology and expertise have been transferred to Indonesia, but not yet to Indonesian individuals or companies.

**Environment**

Viscose fiber production is not a very clean process. The combination of chemicals employed in the process results in the emission of a variety of sulfur compounds and the large amounts of water employed are ultimately fouled with both organic and inorganic matter. Without proper procedures and equipment for capturing and processing, the potential impact on the environment is great.

Lenzing has adopted an aggressive attitude with respect to the environmental aspects of the project. A recovery system for gaseous emissions has been incorporated into the production process. This system captures the various gases, then converts the sulfur compounds into sulfuric acid, which is then used in production. A total of US$15 million was invested for the technology used in this conversion process, but the sulfuric acid produced has sufficient value that the investment has a positive financial rate of return. Included in the budget for the current expansion is an additional US$2.5 million for revamping this system, which will further improve its effectiveness.

Water used by the company is taken directly from a river adjacent to the plant. The water is first treated and then used in a variety of manners. Wastewater is processed in a US$3 million treatment plant located on the site. After treatment, the water is discharged back into the river. The discharged water meets government standards, with the exception of sodium sulfate, a relatively benign compound.
Wastewater treatment results in a sludge that is a combination of organic and inorganic matter. Currently, that sludge is placed in a landfill adjacent to the plant which has been designed to contain drainage. Once the current expansion is completed, the sludge will be incinerated in a company power plant, and its volume will be significantly reduced. The ashes from the power plant will then be placed in the landfill.

SPV's decision to aggressively pursue environmentally sound technology has not been followed by all Indonesian viscose producers. Adjacent to the SPV plant is another viscose plant, but without the sophisticated gaseous emissions recovery system incorporated by SPV. As a result, sulfur compounds are released into the atmosphere and are easily detected when the wind is in the wrong direction. The government is working to improve its regulation of gaseous emissions, but its emphasis is more on water quality at this time. SPV is clearly well ahead of its competitors in the environmental aspects of its operations.

Conclusions

SPV has made a substantial impact on the local and national economy. Its ongoing operations and investment program have resulted in the injection of millions of dollars into the economy annually. It provides direct and indirect employment to thousands in an area that was previously largely undeveloped, and has developed an extensive training program to develop technical skills in its workers. It also provides the government with substantial tax revenues and has made a significant contribution to the local community by investing in commercial and social infrastructure. Environmentally, the company has been conscientious, with a significant investment in equipment and technology that reduces the company’s environmental impact to acceptable levels. In summary, SPV is a good example of the positive role that a relatively simple manufacturing project can have in the economic development of a country.
Annex

IFC over the years has used the financial rate of return (FRR) as a primary measure of project feasibility from a business viewpoint and the economic rate of return (ERR) as a gauge of its development effectiveness. The FRR is based upon constant price projections of pre-interest net cash flows, subtracting for project costs. The procedure calculates the rate of return that exactly offsets positive and negative cash flows.

The ERR differs in some respects from the FRR. Although the method of formal analysis is similar, the cash flows are modified to represent the project's impact on national welfare, not corporate welfare. For example, if project revenues benefit from elevated prices that are a consequence of high tariff barriers, an adjustment is made to the cash flows to reflect this distortion. That is, international or "border" prices are used for tradable goods.

The table below provides data on the FRR and ERR calculated at two different times. The so-called **ex ante** figures are estimates made prior to project implementation. The other columns provide figures on recalculated FRRs and ERRs when an Investment Assessment Report (IAR) is completed. Typically, IAR estimates are made some years after the project implementation has been completed and funds disbursed.

### Effectiveness of IFC in Encouraging Development

**Table 1. Median Rates of Return for 347 IFC Projects Completed in the Period 1978–95 (percent)**

<table>
<thead>
<tr>
<th>Region</th>
<th>Ex Ante FRR*</th>
<th>IAR FRR</th>
<th>Ex Ante ERR</th>
<th>IAR ERR</th>
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<td>9</td>
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<td>20</td>
<td>12</td>
</tr>
<tr>
<td>Average</td>
<td>19</td>
<td>12</td>
<td>20</td>
<td>12</td>
</tr>
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</table>

Source: IFC Economics Department

* Definitions: FRR = Financial Rate of Return, ERR = Economic Rate of Return, IAR = Investment Assessment Report

In 1995 IFC initiated a program intended to summarize various aspects of the Corporation's impact on development. In its first year the program detailed the development contributions of 32 investment projects that had been financed several years earlier. Because the number of projects remains small, results must be considered preliminary. IFC's Economics Department plans to add information on approximately 30 projects annually, creating a database that in time will paint a broad picture of development results from IFC's investment activities.
In the following summary, individual projects have been grouped into two categories: non-capital market projects and capital market projects. Because the former outweigh the latter in IFC’s portfolio, the 1995 sampling contains 26 non-capital market projects, with the remainder falling into the second group.

**Non-Capital Market Projects**

Information on development impact was gained using a detailed questionnaire organized according to various areas of development impact. Major results from these questionnaires are summarized in Figure 1.

![Figure 1. Contributions of Non-Capital Market Projects to Major Development](image)

In over 90 percent of projects reported, IFC enterprises have been sustainable in the sense that they are financially viable and have resulted in increased market competition; only three are dependent in any way on government protection or subsidies. Moreover, in the vast majority of cases projects included extensive employee training and resulted in worker incomes that were higher than prevailing wages in their respective communities. In addition, IFC has insisted on attention being given to employee health and safety, with the result that in nearly all cases covered in this survey such conditions were improved.

Technology transfer also has been an important part of IFC projects, occurring in over 60 percent of the projects. In most cases, the transfer has been complete, because the local company has been able fully to absorb the knowledge and, in many situations, make improvements. This technology has taken many forms, including not only engineering knowledge but also improved operational practices and management procedures.

Some projects provide infrastructural elements, such as electricity generation or roads, that can be used by others in the community once the project facility has been put in place. Such projects are generally exceptions, but they still represent one-third of the reported cases. Similarly, all IFC projects are required to abide
by World Bank environmental standards, and these projects have tended to serve as examples for others, either in demonstrating to the host government that reasonable environmental standards can be imposed or in convincing other business people that acceptable standards can be achieved within a competitive environment.

**Capital Market Projects**

IFC activities encompass a wide variety of projects intended to improve the capacity and operating characteristics of financial markets. These include credit lines through commercial banks, institutional loans and equity financing, leasing companies, and venture capital and equity funds and others. Thus far, the number of such projects that have been reviewed in detail is comparatively small: only six in 1995. More reviews will be added to the database as time goes on, but for this report there is considerable variety in the types of projects summarized. For example, this group of six projects involves three banks, two leasing companies and an equity fund.

The overall objective of a capital market project is either to establish or support a sustainable financial institution or to improve the functioning of local capital markets. Typical of the first type of project would be a credit line to a local commercial bank allowing the bank to serve an expanded clientele or to widen the scope of product offerings to existing customers. In the second category would be equity, which expands potential markets for equity securities, thus serving to deepen such markets for local companies.

Each of the six capital market projects was successful in the sense that the institution involved was viable without any external support. In contrast to non-capital market projects, financial institutions generally did not depend on IFC or other sponsors for technology that would assist in making the institution successful. Instead, most financial companies relied almost entirely on their own skills for success. Moreover, as in non-capital market projects, financial projects usually had the effect of raising employee incomes and, relatedly, training was an important feature of project structuring.

The most important measure of development effectiveness for a financial institution, however, is the degree to which a project promotes capital market growth and maturity. Did the project result in the introduction of new products or services? Did it add competition to the market? Were financial sector standards, practices or procedures improved? Did positive changes occur in the sector’s regulatory framework? In these areas, IFC projects usually contributed directly. In addition, in all but one project (the equity fund), the assisted financial institution provided increased services to small and medium-sized enterprises in the recipient country.

**IFC’s Role in Assisting Companies**

Without question, the major contribution IFC makes when it becomes involved in a project is in the provision of financing—both its own financing and the additional funding often made possible by IFC involvement. In IFC, this mobilization of funding has become known as the catalytic role, and it is important in both capital and non-capital market projects.

Beyond its catalytic role, IFC is expected to make special contributions that add to a project’s development contribution. For example, in the 26 non-capital market projects reviewed in the study, IFC’s presence was critical in improving the environmental standards applied to the project. Other areas of contribution noted in the study were carrying out market assessments, arranging acceptable contractual terms, bringing sponsors together, and helping to resolve various issues with the government. The object in all of these areas is the promotion of a healthy private sector in which, through competition, sustainable private enterprises can be built.
THE PRIVATE SECTOR
AND DEVELOPMENT:
FIVE CASE STUDIES

The International Finance Corporation, a member of the World Bank Group, was established more than 40 years ago to encourage economic growth in developing countries through the private sector. It has undertaken this mandate by investing its own funds, together with those of other private sector partners, in more than 100 countries, often in very difficult business environments. It does so by sharing full commercial risks without recourse to any government guarantees. Because IFC always assumes only a minority position, the enterprises it supports represent a sizable multiple of IFC's own financial interest. Today, IFC's active portfolio amounts to more than $10 billion of long-term loans and equity in over 1,000 developing country firms.

To be true to its mandate, IFC requires more than financial success. It requires above all that the investments it makes also contribute to economic development in its host countries. Documentation of these contributions is no easy task, because there is no consensus about precisely what constitutes "development" and because the data upon which judgments might be based have not, in the past, been collected systematically. This publication represents a first effort by IFC to systematically measure and disseminate information about the development contributions of a sample of IFC investments.

The Sector and Case presents five individual case studies of companies and financial institutions in which IFC has made investments. These cases span a broad range of investments: the initiation of shrimp production in a remote area of Madagascar, the first privatization of a large water and sewerage company in Argentina, textile production in Indonesia and two financial institutions, one in Benin and the other in Bolivia. Together, they provide a striking picture of how imaginative private projects, when structured appropriately, can contribute measurably to the growth and well-being of their host countries. An Annex provides data in summary form from a wide sample of IFC projects.

The Ground series has been launched to make information available to the public on the development impact of IFC's work. As information becomes available and cases are documented, a more complete picture will emerge of the wide scope of development contributions resulting from IFC's financing activities.