Colombia: the Power Sector and the World Bank, 1970-87

In less than 20 years, the World Bank and the InterAmerican Development Bank each lent nearly $2 billion for electric power in Colombia--a very high lending level for one sector in a country of 30 million people. At the request of the Colombian government, OED recently reviewed the World Bank’s lending through this period of rapid generation expansion and financial crisis. The study benefited from the active support of the Colombian power authorities. The government followed up with a two-day seminar, in which OED and other Bank staff participated, to discuss the results of the study and the reform of the sector.

The study finds the analytical basis for the lending program weak, and notes that the Bank did not insist forcefully enough upon the policies and conditions needed to make the sector profitable. The sector’s development is still hampered by the same basic problems as 20 years ago. Its claims on fiscal resources and its external debt are now so large that these problems need urgent resolution. In particular, decisions are needed on how the sector is to be financed in future. The report makes recommendations on sector regulation, management, resource mobilization, investment strategy, and financing.

Achievements, costs

Colombia’s installed power capacity quadrupled in 1970-87, to some 8.4 gigawatts, and the number of power subscribers increased about 3.5 times. By 1987, more than 60 percent of the population, and 45 percent of the rural population, had access to electricity. Households used more electricity than either industry or commerce; their share of consumption rose to 48 percent by 1986. Reasons for this trend: the very high rate of connection of new users (7.6 percent a year), in line with government’s social policy; massive subsidies on residential tariffs; and slow growth in industrial value added (5.6 percent a year), combined with little change in electricity use per unit of value added in industry.

Achievements in the power sector fell short of forecasts, and by the mid-1980s, the sector was in financial crisis. The large investments made in power depended heavily on government transfers and on external borrowing, and were a major cause of fiscal deficits and balance of payments problems (see box).
Goals of Bank lending

Why did the Bank lend so much for power in Colombia? The goals mainly related to sector policy, and the rationalization of the sector’s development. Many institutional improvements were achieved. But the policy goals seem at times to have slipped out of sight, while year after year the power sector provided ready uses for Bank loans, and absorptive capacity elsewhere in the economy looked more limited.

Economic and sector work for power in Colombia did not match the volume of lending, and with hindsight, the analytical foundations of the lending strategy seem weak. In Colombia, like many other developing countries, experience has belied expectations about the direct contribution power development would make to the creation of an industrial base. By 1986, in terms of value added, the power sector still supplied only 2 percent of Colombia’s GDP. Forward and backward linkages from the sector—and hence the multiplier effects of power investments—have remained limited. Labor needs are small. About 60 percent of the sector’s needs for goods and services are still imported. Domestic manufacture of capital goods for power is only economic in large markets, which Colombia’s is not.

Within the power sector, Bank lending supported the following endeavors, but success was generally limited.

Nationwide master plan for energy/power development. Plan preparation was drastically curtailed, to accommodate provincial interests early in the process.

Least-cost planning for generation and transmission systems. Generation and transmission planning techniques vastly improved, though the outcome was much influenced by non-economic factors. But little attention to risk factors and sensitivity analysis tilted the investment selection in favor of inflexible projects with long lead times and high front-end capital expenditures, and, with the recession of the early 1980s, resulted in overcapacity by the mid-1980s.

Reduction of system losses. Overall system losses grew rapidly from 1978 onward; by 1987 they were about 25 percent of net power generated.

Marginal cost pricing. Ultimately borrowers accepted the principle, but average tariff levels stayed very low and tariff distortions worsened.

Better self-financing. After 1977, sector revenues never contributed more than about 5 percent of investment (a recommended range would be 30 - 50 percent).

Reduced dependence on official borrowing. Not achieved. The World Bank and IDB provided 80 percent of external borrowing for power in 1970-87.

Balanced investment program. Investments stayed skewed toward generation and
transmission, at the expense of distribution.

Unified data presentation, compatible financial accounting, across utilities. Not achieved; arriving at an overall view of sector finances is still very difficult.

To sum up, Columbia's power entities have over the years achieved a high level of technical expertise. At issue is a more enabling framework in a few areas of policy making and organization.

Though the Bank has helped the sector to achieve substantial progress, most of the problems noted in those areas by OED evaluation studies of 20 years ago are still unresolved:

- grossly inadequate local resource mobilization;
- poor financial performance;
- unbalanced investment program;
- investment selection procedures that may lead to sub-optimal projects;
- complex and cumbersome institutional structure.

Tariffs

Tariffs have been set too low to cover costs, and central and municipal governments have not derived any dividends from their investments. Very low tariffs for households were a major factor in the poor performance of the power sector. The heavy subsidies largely benefited well-off consumers. Meanwhile, commercial and industrial retail tariffs were much above the costs of service, creating incentives for the large-scale theft and fraud that occurred.

Tariff issues caused persistent tension between the sector and the Bank, but the Bank did not act forcefully in favor of financially and economically adequate power prices. Policy dialogue in the 1980s downplayed problems of internal resource mobilization, and their sectoral and fiscal implications. Later, the Bank did play an important role in the 1986/87 tariff reforms, which were the first to link retail tariffs to economic costs (albeit with large residential subsidies still in place). But with the slow pace of tariff increases agreed to under the 1987 Sector Adjustment Loan, tariffs will not catch up with the marginal cost of supply until well after 1992--when a new phase of investment expansion is scheduled.

The bulk tariff at which ISA sold power to its shareholders applied to nearly 40 percent of the electricity used, but during the review period this tariff was kept at about half the average incremental cost, crippling ISA's finances (see box).
Tariffs need to be high enough both to reflect the economic cost of service and for utilities to service debt, finance expansion, and remunerate equity holders. The Bank should make a broad sectoral approach to tariffs the center of its involvement in the sector, to help improve tariff levels and structure, and resource mobilization.

Finances

Power development takes large amounts of capital. However, when well managed and regulated to ensure sound tariff rates, it can provide low-risk, attractive opportunities for private capital. In Colombia, most of the capital came from official sources, either as foreign loans or government transfers (loans and equity capital). Policies and actions in the sector, and--for much of the review period--the Bank’s relations with the sector, convey the impression that profitability was not a main goal, because financing gaps would be met by government. To help the sector survive financially, central government transferred $1.1 billion (30 percent of its total capital transfers) between 1978 and 1985.

These government contributions went far beyond those economically or socially justified. Financial performance was poor partly because of tariff policies, but also because financing plans were unrealistic, operational performance was poor, and investment programs were too large and inflexible.

Since the late 1970s, the Bank has progressively lowered its standards of financial performance for Colombian power operations--whether those required for Board presentation, set forth in covenants, or tolerated without suspending disbursements or stopping further lending. An important reason was the difficult macroeconomic situation in the mid-1980s. But over-optimism probably played a large detrimental role in several of the projects reviewed.

The resource mobilization strategy of the review period--totally inadequate consumer contributions, massive reliance on government equity and loan funds, and excessive reliance on foreign borrowing--cannot be sustained any longer. Ways must be found to raise resources without government guarantee. For this, the utilities need to become financially profitable, and able to attract local private capital, either as equity or long-term debt. This would imply that consumers (except, perhaps, low-income consumers) would need to bear the full cost of power. Utilities would need to operate largely on strict commercial principles, improving their efficiency. Foreign borrowing would be used only for absolutely essential foreign costs.

To put the sector on a sound financial footing, participants will need to agree on:

- sources of finance;
- utilities’ capital structure, need for autonomy, and diversified ownership;
- much higher tariffs;
- cost-cutting and system loss-reduction measures;

- sound financing plans with firmly committed resources.

It is unlikely that, overall, efficiency can be much improved, as long as profitability is not a main goal. An important first step should be a reasonably uniform presentation of the utilities’ accounts, to permit a clear view of sector finances. If the utilities become financially profitable, ways to raise equity capital from the local capital market, as well as the flotation of long-term bonds in this market, should be considered.

Investment program

Regional concerns among ISA’s shareholders impeded assessment of economic costs and transparent choices among alternative investment projects. Other major influences on investment planning were: consistently high demand forecasts and fear of power outages; delays in project implementation, which increased that fear; and a persistent shortage of sufficiently prepared projects. All this led to the implementation of those projects that happened to be at hand and suited ISA’s shareholders, even though they were not necessarily best for the economy.

Balance: Installed capacity was skewed toward generation, with too little investment in sub-transmission and distribution. In the 1970s and 1980s, the Bank repeatedly drew attention to this imbalance and in 1980 began to address it through distribution and village electrification projects. But financial crisis soon forced the utilities to concentrate only on completing operations already in progress—which were mostly in generation.

Flexibility: Making assumptions about critical variables such as power demand and fuel prices is more risky today than 20 years ago. This calls for more focus on the flexibility and affordability of proposed power investment programs (see box). It may be most useful to design a core program that will meet the projected baseline demand and a complementary program of plants—such as gas-fired, combined-cycle plants—with shorter lead times that will cover excess demand above the baseline.

Institutional issues

The Bank helped with most of the institutional improvements in the review period. But by preferring to overlook Colombia’s regionalism, it lost opportunities for fruitful policy dialogue. For the future, the Bank should encourage candid discussion of issues, especially the politically sensitive sector organization and structure, and the roles of government and private enterprise.

To confront the sector’s problems, and the broader problems these create for the economy, Colombia needs to clarify the basic goals for its power sector, consistent with energy sector goals and macroeconomic policies. It also needs a strong independent regulatory body, to act as a buffer between government, utilities, and consumers.
Broader implications

In several countries, power now accounts for a large share of public investment and external debt. In Colombia, proper financial management of the power sector is key to stabilizing the balance of payments, reducing the fiscal deficit, and achieving sustainable growth. Its experience emphasizes the need to integrate power sector policies for resource mobilization and management with macroeconomic policies, as well as with policies for energy development in general.

The discount rate used in project analysis can strongly affect choices on types of plants and sequences for implementation. In its lending for power in Colombia, the Bank raised the discount rate used in its analyses only slightly over the past 15 years. It would be worthwhile to verify that the discount rate in use reflects the opportunity cost of capital. Such an analysis might lead to a different sense of priorities for Bank-financed investments within country lending programs.

Experience in Colombia emphasizes the crucial need for thorough power sector work and strategic thinking. At important points in the review period, lack of analysis negatively affected lending, and so did the lack of a shared vision, by Bank, government, and sector.

Tariff and institutional reform in the power sector are so crucial that perhaps the Bank should not have abandoned its earlier practice of verifying progress against monitorable benchmarks before undertaking new lending. A case could also be made for measures applied during implementation (e.g., tranching disbursements) to see that progress is maintained.

Pressure to lend, as a pervasive aspect of the Bank’s culture, appears to have played a strong role in several of the Colombia projects reviewed. The experience illustrates two consequences of this pressure. One is the persistent over-optimism reflected in many areas of the Bank’s presentations to its Board of Directors. The other is to undermine the Bank’s capability to enhance and control project quality for a major program of lending.

Box: System Planning: Avoid Outages or Avoid Surplus Capacity?

Utility managers and governments often see power shortages as politically costly, to be avoided if possible. But it is important to value likely shortages accurately from an economic standpoint, since high estimates can lead to over-investments in supply, costing more than government is willing to ask consumers to pay for.

Colombia had power shortages in 1977, 1980, and 1981, and past trends suggested demand would grow at 10 percent a year in the 1980s. But in fact, 1981 also saw the start of recession, and power sales thereafter grew by only 6 percent a year. Excess energy available was about 18 percent of actual requirements by 1985, rising to 24 percent by 1989; it is expected to decline slowly to about 10 percent by 1993. The sector’s investment plan, dominated by large long-gestating hydro projects, was too rigid to be cut back.
The economic cost of the excess capacity over 1986-1992/3, at $450 million in 1985 prices, is estimated at about 3.5 times that of the most severe 1981 power outages, of $130 million.

The highly visible and hence politically costly effects of rationing seem to have been much less important, in economic terms, than the invisible and seemingly costless excess capacity. System planning can easily focus too strongly on outage avoidance and neglect surplus avoidance.

Box: Sector structure and the role of ISA

Seven companies generate, transmit, and distribute power in Colombia: three municipal companies in the main cities; three public regional companies; and Interconexion S.A. (ISA). ISA, a national entity owned by the other power utilities, was set up in 1968 with Bank support to assure power exchanges between them. It became the central planner of generation and transmission plant for the interconnected system, generated its own power, and by the late 1980s was coordinating distribution planning. It was also to have built and run the major additions to the interconnected power system. But its shareholders prevented it from doing so, preferring to keep individual control of the facilities needed to meet demand in their service areas. Further, to minimize the costs of their purchases of power, they prevented ISA from charging a bulk tariff that reflected economic cost, and thus prevented it from achieving satisfactory financial performance.