

## **PRIVATE PARTICIPATION IN INFRASTRUCTURE: CONSIDERATIONS FOR COLOMBIA\***

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### **Abstract**

*This paper provides an analysis of issues the Colombian government faces with regard to increasing private participation in infrastructure. Although Colombia has ambitious plans for private participation in infrastructure and has started to build the legal and regulatory framework to support this objective, thus far progress has been mixed. Colombia is not yet capturing the full benefits of competition in infrastructure services—which are already evident in Colombia's ports sector—and not yet achieving the private investment levels envisaged in the 1995 Development Plan. Several measures must be taken, therefore, to accelerate private participation in infrastructure. Failure to do this will not only defer realization of benefits from better and expanded infrastructure services but also jeopardize the sustainability of the recent legal and regulatory reforms. As mentioned in a number of CONPES documents, the Colombian government has been moving away from the outright ownership of infrastructure towards an approach that emphasizes private provision and competition. As of now, in pursuit of its new role, the government has created a series of semi-independent regulatory entities and pushed hard in the development of project financing of new infrastructure assets like gas pipelines and power generation plants. Private operators provide*

\* This paper draws on work done for the Regulatory Reform Project (World Bank, 1996). We benefited from discussions with many colleagues at the World Bank as well as with Colombian officials. The usual disclaimer applies.

*cellular telephony service and private companies, through joint ventures, are providing financing and installation for thousands of new phone lines. Private concessions are operating in ports, railways, airports and roads and these are set to grow in number.*

*The main message of this paper is that the government should push harder in three areas: divestiture of existing infrastructure assets, developing the regulatory and competitive environment within which infrastructure services are provided, and ensuring that where the government does play a role in mitigating risks in private infrastructure deals, it does so in a way which minimizes the potential distortions of such actions and at minimal cost to government.*

## I. Introduction

The paper deals with the relation between the provision of infrastructure by the private sector and public action in Colombia. The paper provides an analysis of issues the Colombian government faces with regard to increasing private participation in infrastructure<sup>1</sup>. Although Colombia has ambitious plans for private participation in infrastructure and has started to build the legal and regulatory framework to support this objective, thus far progress has been mixed. Colombia is not yet capturing the full benefits of competition in infrastructure services—which are already evident in Colombia's ports sector—and not yet achieving the private investment levels envisaged in the 1995 Development Plan. Several measures must be taken, therefore, to accelerate private participation in infrastructure. Failure to do this will not only defer realization of benefits from better and expanded infrastructure services but also jeopardize the sustainability of the recent legal and regulatory reforms.

The different sections of the paper analyze the government's major roles and how these might evolve in terms of the provision of a competition framework, the role of the Colombian government as owner and operator with particular emphasis on transition issues, the issues of policy and regulation, and the achievement of universal coverage in basic services. The analysis of specific sectors in the paper is to support the analysis of the issues or to make a point and is not meant to be comprehensive.

## II. Defining the Government's Role in Infrastructure

The objectives of the government's program for private participation in infrastructure are defined in CONPES<sup>2</sup> document 2775. It states that the role of the private sector in the provision of infrastructures is to:

- increase the efficiency in construction and operation of projects and services;
- provide additional resources to supply necessary services in a shorter time;

- reduce risks assumed by the public sector;
- obtain the benefits of competition; and
- allow Government to reallocate public resources into the social sectors.

To achieve these objectives, the government's role in the sector has to be clearer defined, particularly with regard to its core functions of regulation and policy-making<sup>3</sup>, an efficient transition to private ownership and operation of infrastructure, and market structures that maximize competition and minimize the need for regulation and the risk of regulatory failure.

As stated in a number of CONPES documents, the Colombian government has been moving away from the outright ownership of infrastructure towards an approach that emphasizes private provision and competition. As of now, in pursuit of its new role, the government has created a series of semi-independent regulatory entities and pushed hard in the pursuit of project financed new infrastructure assets like gas pipelines and power generation plant. Private operators provide cellular telephony service and private companies, through joint ventures, are financing and installing thousands of new phone lines. Private concessions are operating in ports, railways, airports and roads and these are set to grow in number. In fact, in the area of project finance, Colombia has been the leading country in Latin America and fifth in the world in 1995 in attracting project finance, drawing \$1.56 bn of loan finance for infrastructure projects<sup>4</sup>. Direct foreign investment into infrastructure was US\$ 1,490 million during 1995-96<sup>5</sup>.

Where the process has been slowest in furthering private participation in infrastructure, however, is in the divestiture of existing assets. State-owned companies are dominant in electricity, telecommunications and water and sewerage. Plans are currently in train to privatize a large portion of the government's generation assets and during 1996 four generation plants with a total capacity of 1,853 MW were sold for US\$1,007 million. Plans exist to privatize other assets like electricity distributors and local telephone companies.

A major source of benefits from privatizing infrastructure is the establishment of an arm's length relationship between the infrastructure provider and short-term political pressures. While commercialization and corporatization initiatives promote this under public ownership, in practice it has proven virtually impossible to keep politics at bay while the government is the owner, regulator, and operator, however these roles are allocated administratively within the government. Managers of public enterprises have limited leverage to negotiate binding government commitments to tariff or other policies; in contrast, potential private investors will withhold investment until they are satisfied that the government's commitments are credible. Similarly, public enterprise managers are typically in a weak position to insist that governments comply with their undertakings; in contrast, private operators may sue or withdraw service or capital. A corollary is the capacity of government to insist that the operator comply with agreed undertakings—private firms may be sued or ejected and replaced by rival firms; in contrast, public enterprise management is often insulated from such actions by political relationships.

With the move away from outright ownership and operation, the government's policy and regulatory roles will become even more important. In the transition to

competition in electricity and telecommunications, for instance, the regulatory role is likely to increase in importance and complexity as the new entities rebalance tariff structures, regulate interconnection prices and 'fine-tune' market arrangements while maintaining a level playing field for incumbents and new entrants, allowing competition to take place on a reasonably fair and efficient basis while ensuring that service coverage continues to expand.

In some infrastructure sectors, notably roads, there will be a continuing need for public support, the question is simply one of how far private sector participation can be used, both in investing in toll roads, as well as in designing operation and maintenance contracts. At present, however, the transactions costs associated with designing efficient toll road contracts are such that a dominant role of the private sector only seems feasible on relatively large roads. At the opposite extreme is telecommunications where the need for public support is questionable, and indeed inappropriate, interventions are likely to cause substantial welfare losses. In many other infrastructure sectors: gas, electricity, airports, railways and even water and sewerage, it is not clear that the public sector needs to be involved in the long run, except perhaps to provide targeted subsidies to poor customers or regions.

Likewise in the policy arena, important issues have to be dealt with: supporting municipalities in the transaction process, ensuring that financial support is forthcoming where still necessary and maintaining an efficient and secure social safety net. These issues are analyzed in the following sections.

A difficult and important issue is organizing the transition from the government's traditional role as owner and operator of infrastructure towards regulator and policy-maker while ensuring that Colombia's poorest citizens benefit from the government's withdrawal from direct infrastructure provision.

### III. Competitive Framework

Although most infrastructure in this century has been characterized by monopoly provision, in recent years a revolution has been underway in introducing or extending the benefits of competition to infrastructure sectors. The Colombian government is in the process of extending the competitive environment in a number of sectors, notably electricity and telecommunications. This section focuses on how service providers compete with one another in Colombia. In ports, railways and to a lesser extent, in gas, substitute competition (competition with products that are close competitors) could also be an important mechanism that could reduce or eliminate the need for price regulation.

#### 3.1 Telecommunications

The telecommunications sector in Colombia had undergone partial liberalization. Liberalization of value-added services, for instance, has led to the entry of thirty-one operators providing services like data transmission and paging. In cellular telephony, the country was divided in 1994 into three areas with each area

being serviced by a duopoly representing one private company and a mixed public-private company. This affords a degree of competition although the introduction of new technologies such as digital cellular should allow more competitors into these markets once their five year period of exclusivity expires.

The sector was further liberalized with the introduction of competition in long distance services on August 31, 1997<sup>6</sup>. New private operators will be allowed to compete with Telecom, which currently has a monopoly over long distance services both national and international and will continue to operate without having to pay a license fee and an expiration date for its license. The new 10 year licenses (renewable once for the same period) to use the electromagnetic spectrum and the public telecommunication networks to provide long distance telecommunications services are expected to be awarded on December 15, 1997. Applications for licenses will be accepted only from those who control more than 150,000 telephone lines but less than 35% of the total. Together with the requirement that the licensee has to be in partnership with a company that has provided more than 400 million minutes of international long distance telecommunications, the size requirements favor joint ventures between existing Colombian (local) companies and international telecommunication companies. In addition to regular taxes each company will pay a levy of 5% of its revenue to support social telephony (Fondo de Comunicaciones).

The Communications Ministry designed a scheme which will open the market to probably three new entrants<sup>7</sup>, postponing full liberalization, at least for the time being. As well as allowing the government to earn revenues from the license fees the entrants will be paying, this policy will provide some interim protection for Telecom because, in practice, the new entrants into the long distance market will have some disadvantages *vis a vis* the incumbent, Telecom. The main ones are:

- substantial public funding<sup>8</sup> available to upgrade (digitalize) Telecom's network and increase the number of lines;
- Telecom's 'soft budget constraint';
- tax advantages to Telecom; and
- license fee paid by new entrants.

There are, however, substantial disadvantages for Telecom which may offset these advantages including large pension liabilities for current and former workers, and heavily cross-subsidized tariffs: at present, Telecom pays 30-40% of its income to local telephony, in theory a local access charge designed to cover the cost of access to the local market, but in practice, a substantial subsidy of around US \$150 million in 1995. The Government is aiding Telecom to prepare it for the imminent competition and is studying ways to improve its capital base. Some temporary measures to assist Telecom are that international tariffs will not be allowed to be lowered by more than 20% in 1998 and 40% in 1999 with relative to 1997 tariffs. The respective limits for national long distance are 10% and 20%. From 1998 to 2001 Telecom will receive all the income from the 5% levy on gross revenue of the new operators and from 2002 to 2007, 3 percentage points of the five to maintain the social telephony

The fact that bidders are willing to pay a substantial fee of \$150 million for entry into the market shows that there are likely to be some oligopolistic rents

created by not allowing a completely liberalized market immediately. In fact, by not allowing continued entry, the Communications Ministry may be providing the companies with incentives to collude after market shares stabilize.

Nonetheless, the competitive threat that the new long-distance operators pose to Telecom is a significant one which could threaten its viability in the long-term. It is therefore looking to move away from a situation where most of its revenues are earned in long-distance services to one where it earns 40% of its revenues from local telephony. One of the ironies of the situation, therefore, is that upstream competition in long distance national and international services is forcing Telecom to compete with another public sector supplier, Empresa de Telecomunicaciones de Bogotá (ETB), the local telephony company for Bogotá. This entry, although legally sanctioned and undertaken through joint ventures<sup>8</sup> or build-lease-transfer (BLT) contracts with equipment suppliers (it signed the contracts with Nortel, Siemens, Ericsson and NEC for 550,000 lines in Bogotá with a value of US \$385 million), was opposed by the Superintendencia de Servicios Públicos (SSP) which argued that Telecom needed to improve the efficiency with which it provides its existing services. The contracts have also been criticized by the Government because of excessive commercial guarantees and inadequate risk distribution.

This increasing competition is in turn forcing ETB, which has by far the largest local market in the country, to seek privatization as a method of competing with Telecom with greater investment, expertise and management capacity. The opening of competition in telecommunications is creating substantial pressures on the operators and may well force privatization of both Telecom and some of the local telephone companies.

When exclusivity of the long distance market ends in 10 years, however, the government should consider outright liberalization of the sector to allow the entry of new players into the long distance market to ensure that the long distance operators do not collude after their market shares stabilize. At the very least, the government could undertake a cost/benefit analysis of liberalization to determine the potential gainers and losers from such a policy change. This would be analogous to the 'Duopoly Review' undertaken by the UK government after initially allowing British Telecom, the dominant company to compete with one other competitor for seven years.

### **Example 1: The UK's Duopoly Policy in Telecommunications**

The UK telecommunications sector was dominated during the 1980s by the privatized incumbent, British Telecom that was privatized in 1983. In long distance services, the UK government maintained a 'duopoly policy', allowing one favored competitor, Mercury, a subsidiary of Cable and Wireless, to compete with BT through the operation of a nationwide network with fixed links. This exclusivity lasted seven years between 1983 and 1990. In 1990, the government undertook a review of its duopoly policy and ended the policy in 1991. Since the ending of its duopoly policy, more than sixty new operators have applied for licenses to compete in some form with BT and Mercury including British Rail, British Waterways (the canal operator in association with US long distance operator, Sprint), the National Grid Company of England and Wales, and AT&T.

## **3.2 Electricity**

The power sector in Colombia is also moving towards greater competition in service provision. This is being pursued in two ways: through the introduction of a power 'Pool', a market where generation plant competes to supply electricity to the grid, and through 'supply' or 'retail' competition to customers whose peak demand exceeds 1 MW, i.e. through allowing customers to choose the company that supplies their power<sup>9</sup>. Although these changes are new, their impact is likely to grow over time, depending on greater private participation, particularly in electricity distribution, the lack of which is likely to deter investors in generation and could threaten the whole framework.

### **3.2.1 Colombia's Electricity Pool**

The electricity market in Colombia developed from a power-sharing agreement between six vertically integrated state-owned monopolies. The market system is designed to allow generators to compete to provide power to the grid and to provide an accurate price signal to both generators and customers. Its design is very similar to the England and Wales Pool system although there are differences which relate to its evolution from the previous system and to the fact that Colombia is a predominantly hydro based system, in particular the design of the 'capacity' element which is a major part of the overall price.

The major generators and suppliers in Colombia are members of the Pool. Responsibility for system operation is in the hands of the transmission company, Interconexión Eléctrica S.A. (ISA). A technical committee of generators and distributors are responsible for detailed implementation issues. The Comisión Reguladora de Electricidad y Gas (CREG), the regulatory body, is responsible for developing the Pool rules.

The pricing rules are based on a bid-based system, with a single 'node', that is, the Pool price does not vary according to the location of supply or demand. In addition to the basic energy price, there are capacity charges that are paid to all generators on the basis of their contribution to firm reserve, i.e. regardless of whether or not they are generating. These capacity charges are based on the cost of gas turbine plant. These charges have, to date, represented almost 50% of the total revenues paid to generators as shown in Table 1.

The effective price received by the generators is actually less than this because some of the distribution companies are currently in arrears to the Pool - some of the weaker companies cannot afford to make payments to the Pool for the demand that has been received and hence, given the way the rules are written (revenues received by the generators are reduced *pro rata* with reductions in funds received by the Pool), the effective average price received by the generation companies is being reduced.

At present the rules are still evolving. One change enacted by the regulatory agency was to force vertically-integrated utilities to buy at least 40% of their demand from the market. This change should force the prices in the market to

TABLE 1  
PRICE COMPARISON

	Price (US\$/MWh)
Average prices of PPA/BOO (combined cycle)	34
Capacity charge	12
Energy charge	45
Total	
Medium term contracts	35
Spot prices	
July 1995 - May 1996	13.5
Energy charge	12.2
Capacity charge	27.2
Average price	

Source: Dussan (1996).

move to reasonably cost-reflective levels while putting pressure on inefficient utilities.

As shown in Table 1, there was a large mismatch between current spot prices and the price at which new private entry is coming into the market. Given the continued growth in demand, this mismatch in prices might be seen as a reflection that the market is not working as intended, i.e. a price signal meant to equilibrate supply and demand. The introduction of the capacity element was a partial response to this problem. Whether this is a sufficient, or even appropriate, answer to the problem remains to be seen. It is, for instance, absolutely invariant to the amount of capacity on the system and hence does not provide a signal about whether new capacity is needed.

There are, however, a number of factors that are at play here. The first is that the government, through an indicative expansion plan, is trying to 'override' the market. The reason is that the expansion plan is based on a view of extreme conditions: delays in construction and severe drought conditions. One possibility is therefore that the government has a more pessimistic view than the market, regarding the requirements for new capacity and therefore is trying to bring forth new capacity when there is no perceived market need.

The other factor is the inherent volatility of the electricity price in a hydro-based system where the price is essentially a factor of hydrological conditions. In this system, the spot price may be below the average price for many years, offset by several months or years of very high prices. Contract prices which tend to average the price over a period of years will therefore tend to be generally higher than the spot prices for long periods, potentially to a level which remunerates new investment. Table 1 may therefore be a reflection of this pattern, although the price of medium term contracts (1-2 years) is still below the price needed to remunerate new investment.

An important question in a market-based system is how and in what form will new investment be forthcoming. To date, most of the new entry with the exception of three projects, Mammonal (100 MW)<sup>10</sup>, and Flores II (110 MW) and III, has been supported by long-term Power Purchase Agreements (PPAs) which are financially backed by guarantees by the Fondo Energía Nacional (FEN) at prices above the prevailing market price. This new entry is therefore bypassing the market. The government is determined that new plant will not have guarantees in future, however. The hope is that new plant, some of them being co-generation facilities, will come on stream without guarantees like the Termomoléctrica plant (160 MW) under construction.

#### Example 2: Ternobaranguilla—An Example of New Entry

An example on the existing type of new entry is the Ternobaranguilla (TEBSA) project. This is a \$755 million rehabilitation and expansion of the 240 MW Barranguilla thermal power plant. The new plant will be a 454 MW plant constructed by TEBSA, to provide power to CORELCA a vertically-integrated utility for the Atlantic Coast region.

The project is secured through a Power Purchase Agreement (PPA) with CORELCA. The PPA ensures that TEBSA receives a capacity payment regardless of energy sold. Government support of this contract is considerable. FEN guarantees CORELCA's ability to pay the contract. FEN is in turn guaranteed by the central government. CORELCA's financial situation is poor suggesting a reasonable likelihood that the guarantee would be drawn upon, so in order to ensure solvency, FEN has given CORELCA a \$300 million loan. Although the project is privately funded, government support is substantial and the market risks taken by the operator are limited.

The goal is to have investments into new power plants without an assured price written into a long term contract, private investors building 'merchant' plant which receive the bulk of their revenues directly from the Pool, or from contracts that reflect the Pool price. In other countries, such as the UK and Chile, privatized generators have been major investors in these markets, given their greater knowledge of the market and likely price movements. In the UK, half of the investment in the new market has been by existing players who have shown much greater willingness to take market risk—building new plant without long-term contracts—than completely new entrants to the market.

The key to sustainability is therefore the privatization of existing generation assets, ensuring that this capacity is used efficiently and also that there is a fund of capital available from operators that understand the market. The government's sale of some of its generation plant is very encouraging in this regard.

The problems of arrears means that the privatization of distribution is also crucially important, however, not just to solve the problems of distribution itself, but to sustain the market system. This should help to ensure that the government does not need to provide financial guarantees to new generation plant developers, as the distribution entities become viable contracting partners in their own right and have the financial wherewithal to pay for the power they receive.

### 3.2.2 Competition in supply

The other element to competition in electricity is 'supply' competition to large customers, who can buy direct from generators and other suppliers. Customers greater than 1 MW are free to contract with generators. This system is presently being used by large customers to bypass tariff systems that are substantially cross-subsidized. The reaction to this ability to bypass is a surcharge of 20% on unregulated sales which is collected by the local distributor. This is, however, a substantial improvement on the situation where industrial and commercial customers were traditionally paying much higher prices, sometimes up to 70% higher than the cost of supply to cross-subsidize domestic consumers.

As supply competition continues, the impact will be to put pressure on existing vertically-integrated utilities with inefficient generation arms, or on companies that have made poor purchasing decisions in the past—bought into high-priced long-term contracts for instance. In countries and sectors with a longer history of supply competition, the impact has generally been to increase the importance of the spot market and erode the ability to write long-term contracts. The result is therefore likely to emphasize the need to have private operators enter the market and take higher levels of market risk than is currently the case.

### 3.3 Other infrastructure

The lessons that Colombia learns from its experiences in telecommunications and electricity may also transfer to the other sectors. In particular, gas may be amenable to the same type of competitive framework as electricity. In the UK, for example, the competitive framework for gas and electricity is almost identical with supply competition taking place on identical schedules and the development of a spot market in gas to allow suppliers flexibility in their upstream purchasing arrangements.

The Government has developed some innovative transport projects involving private financing. At El Dorado airport in Bogotá, a private firm is building a second runway while operating the existing runway in return for landing fees. In 1996, a 15 year concession for Cartagena's airport was awarded for US\$ 24 million and in February 1997 the concession for Barranquilla's airport was awarded for US\$ 9 million. The pilot El Vino-Tobia Grande-Puerto Salgar toll road project is addressing the issue of the liquidity of guarantees and other problems of previous road concessions. This toll road as well as the two railroad concessions will be awarded on the basis of the lowest capital subsidy.

## IV. Government As Owner and Operator

It is by now well known that there are significant costs to having governments own and operate infrastructure assets. The welfare benefits of divestiture have been documented extensively with the results being positive when conducted

appropriately, that is in a competitive environment where this is feasible or well-regulated if not<sup>11</sup>. Positive experience in Colombia has been found in the partial privatization of the ports sector<sup>12</sup>.

Many specific benefits of infrastructure privatization follow from this fundamental change in institutional relationship. Those benefits include increased efficiency in investment, management, and operation that flow from several distinct but complementary factors.

(a) *Commitment to Cost-Covering Tariffs*: This is the key to allocative efficiency and to the provision of adequate funds for infrastructure maintenance and expansion<sup>13</sup>. Private firms exposed to commercial or investment risk will require a credible commitment to cost-covering tariffs, and will withhold participation without this assurance. They will also be more diligent in recovery and collection practices, as illustrated by the major turnaround in billing and collection practices in countries like Argentina and Peru.

(b) *Improved Incentives for Operational Efficiency*: With profitability on the line, private firms under appropriate tariff regulation will face strong incentives to contain costs and increase productivity. This is evident in lower cost overruns for new projects, lower staffing levels, more rapid adaptation of new technologies and processes, and enhanced efforts to improve billing and collection practices.

(c) *Access to Management Expertise and Technology*: Private infrastructure arrangements allow countries to access modern technology, skills and expertise in running complex enterprises in a commercial manner. Although telecommunications is the most obvious example of this, even water companies can benefit significantly from modern technology and commercial operations as has been the experience in Argentina and the UK.

Another important benefit of introducing private management and investment in infrastructure is the existing methods of corporate governance and their superiority in monitoring and ensuring efficient performance. In private corporations, management retains substantial autonomy to run the day to day business, but is ultimately accountable to its shareholders for good performance. Performance is continuously monitored by capital markets, for instance equity analysts, debt rating agencies, banks and so forth. Markets themselves and the information provided by the price of the stock create effective benchmarks for analyzing performance of companies. Ultimately the threats of bankruptcy, hostile takeover and a wide variety of other pressures provide effective measures to improve the efficiency with which a company performs<sup>14</sup>. Even if these performance mechanisms are not completely successful, it is the shareholders and other creditors whose funds are at risk from poor performance.

### 4.1 Transition issues

The absence of the public sector in operation and investment in infrastructure is, however, an end point. A goal that is not always feasible but a goal to which public policy should be directed nevertheless. In a 'transitional phase' the policy issues are likely to be more confused by the need for government support in

moving to a sustainable environment. The reasons why this transition is needed are:

- the lack of credibility of the government in the early stages of a reform program;
  - absence of a well-developed capital market, providing long-dated debt to finance infrastructure;
  - distorted tariff regimes;
  - restructuring and other policy measures to ensure competition and efficient regulation;
  - labor and popular opposition to wholesale privatization; and
  - the dominant position of municipal government in infrastructure provision.
- On the first point, the potential lack of credibility is most convincingly reduced or eliminated through pushing wholesale reform. Argentina provides a good example of a country that has a poor political and economic record, but still managed to persuade foreign investors to invest large sums of money into the country through an ambitious privatization program.

The second point affects the forms of private participation that are feasible, but also suggests that divestiture, which does not require the same levels of commitment of long-dated debt and can be a way of promoting local capital market development, could be a useful part of government strategy<sup>15</sup>.

Given the benefits from divestiture, it is not always, however, a straightforward process. In particular, sequencing may be an issue, for instance because tariffs may remain below costs. This is obviously an issue that has to be addressed, although one which is more likely to be addressed if private capital is dependent on the tariff increase than if it is a public entity that suffers, as mentioned in the previous section.

One of the bigger issues relates to private owners reliant on government entities at one or other end of the production chain. An obvious example is in electricity generation. Here, a common solution has been the provision of government guarantees to ensure that the public entity upholds its end of the contract. Colombia has needed to use government guarantees to get the private sector to build new projects in electricity generation. One of the reasons for the guarantees has been that private generators may be reliant on payments from badly operating municipal companies. This affects the need, not just for guarantees, but also impacts on the efficacy of the market itself because payments arrears will actually reduce the price received by generators. Privatization of distribution should therefore be a priority, not only to improve the performance of the distribution system, but also to reduce the requirement for upstream guarantees and improve the performance of the sector as a whole.

In telecommunications, a similar effect occurs because the local telephony companies are often so weak that they need substantial transfers from long-distance revenues to survive. In this case, the divestiture of local telephony would not only benefit this part of the sector but also mean that long-distance prices could fall to competitive levels.

In the toll roads sector government financial support may not be transitional and may have to be provided in every difficult project to ensure that private

financing is forthcoming. In toll roads and other project financings, the government should ensure that guarantees or other forms of government support to projects are provided in a way that do not distort the incentives of the private parties to minimize cost and monitor project performance and are provided at least cost to government. This is a complex issue that will not be analyzed here but is currently being considered in a number of contexts, notably work by the government, the World Bank and consultants on the financing of the El Vino-Tobia Grande-Puerto Salgar toll road project.

The evolution of the transition is reflected in the Government's approach to guarantees. Initially construction, commercial and regulatory risks were covered and resulted in large contingent liabilities that are on average equivalent to 20% of total project costs. The emphasis has shifted towards creating conditions to reduce the demand for guarantees and to increase the liquidity of the guarantees to ensure repayment of debts instead of concentrating on the profitability of the project to promote bankability.

#### 4.2 Mixed companies

Many of the existing and proposed private sector ventures in infrastructure in Colombia are on the basis of 'mixed companies', where a portion of the equity in an existing public company is sold to a private operation with government retaining a portion of the equity. Such mixed companies are common internationally, but the political influence which is retained varies considerably. Although these forms of company are common, there is increasing evidence that they operate relatively poorly. A careful study<sup>16</sup> stated that "[T]here is] robust international evidence that state enterprises and mixed enterprises are less profitable and less efficient than private corporations in the long run. With respect to profitability, mixed enterprises perform about the same or worse than SOEs, while in terms of efficiency, mixed enterprises perform about the same or slightly better than SOEs." Mixed enterprises are sometimes actually worse than the extremes: pure private ownership or complete public ownership. There may be number of reasons for this performance including the ambiguous nature of the objectives of the company and the conflicting interests of the different owners. This section discusses some of the reasons why the mixed company approach has been taken and how some of the adverse results found in the study can be mitigated.

- Problems with the mixed company approach are that:
- the public sector retains a position to influence the management of the company thus confusing the roles of the public and private sector;
  - the public sector has a conflict of interest as both regulator and owner;
  - the reversion to public ownership is relatively easier.

There are, however, reasons why the mixed company approach may be a reasonable one in a 'transitory' environment. The following could be thought of:

- it allows the government to 'unbundle' the company more cheaply than would be the case if the company were privately owned;



- there is a 'risk premium' associated with selling to the private sector initially which may substantially reduce the value of the shares until the regulatory and market framework are 'sufficiently' credible.
- to maintain a degree of political control over the operations of the company, in environments where the regulatory framework is weak or nonexistent;
- to prevent takeover of the company by 'undesirable' companies.

The first point will be important if vertical integration is an important barrier to a more competitive environment, for instance as is the case in some of the vertically integrated electricity companies, Telecom which has both local and long-distance services and some of the multi-utility municipal companies like Encaali and the Empresas Públicas de Medellín (EPM).

The second point is that in the absence of a credible regulatory regime or uncertainty regarding the government's policy decisions, private investors may demand a high 'risk premium' to hold utility shares. Simply put, the sale of shares may not raise a great deal of revenue. As the 'risk premium' is unwound, however, as investors become familiarized with the regulatory regime, share prices rise, often substantially. In the UK, for example, infrastructure privatizations were often associated with significant price rises, raising criticisms that the shares were sold 'too cheaply' which accords with the theory that investors were concerned with the functioning of the regulatory regime, but then gained greater confidence over time. In order to mitigate this effect, shares were often sold in tranches, although management was transferred to private hands immediately, and the remaining shares were sold later once the price had risen.

The third and fourth points are not reasonable ones—the government should aim first to put in place a functioning regulatory framework—the Colombian government has one and so this should not be a reason for public ownership. The fourth point is often controversial in the context of 'strategic' industries like oil, rail or electricity. Here a substantial government shareholding is not necessary, because concerns such as these can be answered through government ownership of 'golden shares' which can be used to prevent hostile takeovers by parties not considered acceptable to government or changes to the company's articles of association.

### Example 3: Cartagena: An Example of a Mixed Company

A recent example of this approach is the Cartagena water concession<sup>17</sup> which was awarded in 1995. In this system, the public sector holds 50% of the shares and the private sector operator (Aguas de Barcelona) retains 45% with the remaining 5% in the hands of other private operators. The mixed company, Acuarcar, was initially capitalized at \$4 million and signed a 26 year operations and maintenance contract with the local government in June 1995.

The local government retains ownership of the assets and investment responsibilities. Compensation for the private operator is on the basis of:  
 • a fixed percentage of total revenues of Acuarcar, set at 2.85% of total revenues in the first year, with annual increases up to 4.85% in year five, remaining constant thereafter.

- dividend distributions from Acuarcar profits, as determined annually from the Board.
- The early results of the new company have been impressive, as shown in the figures below, particularly with regard to measures which increase revenues.

Indicator	Before Contract	After Contract
Operating revenues (US\$ mn)	10	12
Gross Income (US\$ mn)	(2.5)	0.9
Meiring (%)	47	62
Collection Rate (%)	50	82
Staff	1,200	385

Some of the financial improvements which occurred were as a result of a central government-financed voluntary redundancy program which reduced overall staff numbers by 600, as well as a transfer of pension liabilities to the municipality. The corporate governance structure is of a board presided over by the mayor with five members. Given that the public and private board members are likely to have substantially different interests, it is not clear relations will remain harmonious in the longer term.

This potential conflict is one reason why the operator takes a management fee before dividends are distributed. It is not clear whether the private sector has the right incentives in this case. It could, for instance, try to rely solely on its fees, which are based on revenues, rather than trying to maximize dividends. This is especially true if the government decides to take a tougher stance about funds for investment. To the extent that investments increase revenues, the private operator will encourage investments which are at no cost to itself (as the contract is structured as a lease, all investments are publicly financed) but increase its revenues. The danger with this alternative is that politicians retain a dominant role in the new company and therefore there is a possibility that there will be disputes and given the life of the contract, a change of government is likely to change the relations on the board.

There are a number of other reasons why in the short run the mixed approach has been used:

- tax advantages;
- ability to borrow at preferential rates;
- undertake changes with less political backlash.

The first two of these points are not good ones to use, as will be discussed further in section 4.4 regarding the importance of maintaining competitive neutrality: tax and borrowing positions should be identical for private or mixed companies. If the third issue is important, then the design of the company's governance structures should ensure that the political influence of the government is minimized.



What may be useful in mixed company environments would therefore be the following:

- a public share offering so that government is aware of the market value of the company;
- sale of a majority of shares to the private sector;
- corporate governance mechanisms that limit the intervention of the political shareholders, ideally a trust structure for the remaining government-owned shares<sup>18</sup>;
- a timetable for divestment of the government's remaining shares in the mixed company to show a credible commitment to a transition to a fully private company;
- 'golden shares' if the need is to prevent takeover by certain 'undesirable' entities.

It is the case that many privatizations take place gradually where the government liquidates its position over a number of years. This can enable the government to take advantage of any expected appreciation of the share price in future years as the initial risk premium is unwound. The central government seems to have the right approach in the case of the privatization of its generation capacity, where the proposal is to hold the government's remaining shares in a trust where they will be sold off at a future date but with little or no political influence in the companies in the interim.

#### 4.3 Subconcessions

One unusual aspect of the Colombian approach to private infrastructure are the 'subconcessions', 'joint ventures' and other forms of contracts between public corporations and private entities. The table below gives a breakdown of some contracts of this type between public and private companies. Other examples could arise from the roads and aeronautics administration, because in Colombia they are formally equivalent to a public enterprise.

There are a number of reasons why this particular approach is taken, both good and bad. In effect, one argument in their favor is that they are simply a form of 'contracting out' as might be undertaken by a private company. The contracts bring clear benefits in terms of private expertise, finance and management. The dangers of these forms of contract are that they potentially can upset or limit the ability to privatize or restructure the public entity and they often include implicit guarantees which can diminish the government's shareholder value.

Often, these contracts act to mitigate the impact of the competitive or regulatory regime on the private contractors that are often acting as fixed price service providers. This can be seen in the BOMT gas contracts or the telecommunications 'joint ventures' where the private operators are essentially installing lines on a nearly fixed fee basis. In order to speed its entry into these local markets, Telecom signed a number of 'joint venture' agreements (BLTs) with equipment suppliers Alcatel and Nortel, for the installation of 423,000 lines at National level during

TABLE 2

SAMPLE OF CONTRACTS BETWEEN PUBLIC COMPANIES AND PRIVATE OPERATORS

Public Company	Type of contract	Investment	Description
Telecom	joint venture	new lines	contracts with equipment suppliers to expand network
Ecopetrol	BOMT	gas pipelines	essentially BOT contracts to develop gas network
EAAB	concession	rehabilitation of treatment plant and new pipeline	similar to a BOT except it is for rehabilitation of a water treatment plant and the construction of a new water pipeline
Ferrovias	concession	service provision	all operations except use of the track infrastructure

the period 1993 - 1996, the value of these contracts being US\$507 million. The risk taken by the private operators is minimal: Telecom bears almost all of the revenue risks associated with the installation of these lines. They are really a high-cost alternative financing mechanism for Telecom. This is also true of the new private generation BOTs where the entities bearing the market risk are almost exclusively government-owned.

The entities that are bearing almost all of the regulatory and competitive risk are therefore public entities at present. The government should try to ensure that over time private operators face more regulatory and market risk, i.e. public entities are not used as 'cushions' to shield private players from these risks.

Although in theory no private contract can supersede the force of law or the regulator's decrees, in sectors like water, where municipal ownership is pervasive, there may be instances where a municipality can sign a contract which is at odds with the regulatory rules governing the sector. One possibility is a lease contract whereby the private operator retains the responsibility for setting tariffs and billing customers but investment remains in public hands. In this case, it is possible that tariffs could remain below cost-recovery levels despite regulatory rules. It would also not be clear who or how disciplining could take place—presumably it would be the responsibility of the SSP to ensure that the tariffs met CRAS's criteria, but the question is whether it would discipline the operator or the municipal government. The absence of clear lines of responsibility could significantly delay investment and private participation into municipally-owned infrastructure sectors.

In some cases these types of arrangements could be seen as a pragmatic response to development of a sector. In the case of Ecopetrol, for instance, and its development of the gas pipeline network, there were a number of reasons why this approach was taken, including:

- the early development of the network relied on conversion of existing oil pipelines;

- private sector operators relied on the revenue stream and assets of Ecopetrol as an implicit guarantee of repayment in the absence of central government guarantees;
- Ecopetrol's statutory monopoly over development of the sector.

In the case of the gas sector, the 'transition' approach is very clear. Ecogas has been vested as a separate company in 1996 and will be sold off in the medium term as it establishes a record of profitability although there is arguably no reason why it could not be sold off sooner if its prospects were seen as bright. Many companies, for instance high tech start up companies with good growth prospects often have high share prices notwithstanding their early lack of profitability.

One interesting reason why these approaches are used is that public corporations, such as Ecopetrol or Telecom, are relatively credit-worthy institutions against which private operators are relatively happy to write contracts with a certainty of receiving funds. In the case of poorly designed contracts, the high costs of these contracts simply diminishes the value of the public shareholding in these companies. Entities such as INVIAS which do not have such strong cash flows may be forced to go to government to ask for guarantees or other contingent liabilities<sup>19</sup>. Although this may seem like a 'costlier' approach to private financing it does mean that there is greater clarity about its cost<sup>20</sup>.

#### 4.4 Competitive neutrality

In a transitional phase, as the government phases itself out of ownership and operation of infrastructure, 'competitive neutrality' may be an important issue that will have to be addressed in those areas where public or quasi-public entities compete with private operators. 'Competitive neutrality' is the position whereby public and private entities compete with one another on a 'level playing field', that is, there are no competitive advantages held by either the public or the private sector. Some of the major distortions that competitive neutrality is meant to solve are the advantages that public entities may have by virtue of their public status, for instance, tax or borrowing privileges. The other distortion is that state-owned enterprises simply do not have the pressure to earn a commercially viable rate of return on their assets.

These advantages mean that public entities have a net competitive advantage *vis a vis* private operators. These advantages mean that the public entities can afford to charge lower prices than their private sector counterparts, not by virtue of their greater efficiency, but rather because of these artificially awarded privileges. Private entrants will be deterred from entering the market, public companies will not face the same pressures to improve efficiency and prices will not reflect the true underlying costs of supply. These privileges also translate into costs which are born by government finances, resulting in the 'crowding out' of potentially more important items, such as social sector spending or the reduction of the government's deficit.

The government of Australia (GOA) has analyzed this issue systematically and published a policy statement on competitive neutrality<sup>21</sup>. The document reviews the areas where competitive neutrality concerns exist and discusses the means to ensure:

- tax neutrality;
- debt neutrality;
- public sector rate of return requirements equivalent to private ones;
- regulatory neutrality;
- full cost pricing principles are adhered to.

The first issue is straightforward to identify: the tax burden should fall equally on public and private entities. On the issue of debt neutrality, the GOA points out that borrowing cost advantages to public entities arise from explicit or implicit guarantees of government support. It states that it will modify this situation by applying a borrowing levy on public entities such that they will pay a rate of interest equivalent to what would be paid if the borrowing was occurring in the financial markets (without a government guarantee).

On the issue of regulatory neutrality, it states that public entities will be subject to the same regulatory environment as private entities, extending to all regulatory requirements such as environmental and health regulations.

More controversially, the GOA argues that public enterprises should earn commercial returns at least sufficient to justify the long-term retention of assets in the business, and to pay commercial dividends (equivalent to the average for their industry) to the government Treasury from those returns. The sum total of these requirements should be sufficient to ensure that full cost pricing principles are adhered to.

There are also competitive disadvantages to public ownership: conflicting non-commercial goals, community service obligations and more onerous accountability requirements. The Australian government argues that by ensuring competitive neutrality, these requirements may be identified and funded in a more transparent fashion than is currently the case.

In Colombia 'competitive neutrality' seems to be breached at present by Ecopetrol offering gas to the industrial sector at less than the private price. In telecommunications, the fact that Telecom does not have to pay for licenses for areas in which it is a new entrant in comparison with the price that is paid by private operators would also be seen as a breach. The Tax Reform law of 1995 could also fall foul of such competitive neutrality rules.

Although these principles do not seem likely to be achieved in the short run in Colombia, particularly with respect to the requirement that public entities achieve commercial rates of return on their assets, the application of these rules or something like them would be an important element in 'leveling the playing field' and improving the competitive environment for infrastructure provision.

#### 4.5 Municipal ownership

Although municipal ownership is most pronounced in water and sewerage, municipal ownership extends to almost all infrastructure sectors with municipal

companies operating in electricity, gas and telecommunications. Municipal ownership opens a series of issues with regard to the ability of the central government to influence overall infrastructure policy.

One issue is the lack of expertise at municipal level with regard to divestiture and concessioning—when municipalities become interested in increasing the degree of private participation in their infrastructure, central government support is likely to be needed to help them manage this process, preferably through some type of 'one-stop shop' that can assist municipal governments in designing a scheme that meets their objectives.

A second issue is the interrelationship between central government support to the municipalities and the incentives for them to seek greater levels of private sector participation in infrastructure. The major issue here is whether central government resources can be oriented towards providing 'carrots' to stimulate greater private participation, or at least not act to create 'moral hazard' problems, i.e. by repeatedly bailing out basket case municipalities, or providing concessional financing to municipal government enterprises, but preventing private operators from accessing the same source of funds.

The third difficult issue is that many municipal enterprises are extremely small, often below the threshold that would interest a large international strategic investor. In these cases, new strategies for private participation will have to be devised. These could include:

- greater reliance on domestic capital sources;
- encouraging divestiture and then allow smaller entities to merge;
- encouraging municipalities to examine joint concession arrangements between adjoining municipalities. The forthcoming bid for the operation of the water and sewerage systems of 44 municipalities in the Department of Antioquia will be interesting as a 'test case' of whether a multiple municipality contract can be designed to agglomerate a variety of systems under the responsibility of one operator.
- Allow some municipalities to agglomerate with adjacent private concessions. In the short run, the larger municipalities are moving faster than the smaller ones in attracting private participation, as has been the case elsewhere in Latin America. In any case, it is likely that a number of good divestiture or other PPI projects in the larger municipalities will have a positive demonstration effect which should lead to the smaller municipalities being encouraged to follow suit.

## V. Policy and Regulation

If government maintains responsibility for both policy and regulation, policy being actions carried out by the government through its ministers and regulation by autonomous or quasi-autonomous regulatory agencies, then an important issue is determining the line between policy and regulation. At the broadest level, policymaking is about choices. In infrastructure for instance, the choices include determining the degree and scope of competition between service providers, whether

the suppliers will be public or private and what public investment should be channeled into the sector. It is also about determining the type of regulatory framework that governs the behavior of the service providers.

Regulation can therefore be seen as the administration of the rules that are a consequence of the choices that are made at the policy level, particularly ensuring that operators abide by these rules. An important question is how much can be delegated regarding the administration of these rules. Although regulators would probably not be responsible for determining whether or not service providers should be privatized, in some instances, notably the US, regulators have been responsible for what are seen as 'policy' actions in other countries such as mandating competition in their jurisdiction. In other countries, regulators are responsible for a more limited set of actions: simply ensuring that service providers abide by the rules. If private providers are the norm, then at a minimum regulation will be required to set price controls on naturally or legally defined monopoly infrastructure providers. If competition between service providers is the goal, then the regulator may have some discretion in changing the regulatory rules to promote competition.

Another important issue is in determining whether regulators will have the scope to update, change or amend the rules, with or without the consent of the government or the service operators. Small changes, for instance updating the price controls on regulated services, for instance, would probably be seen as a prime responsibility of a regulatory authority. Large changes, however, would arguably be beyond the scope of the entity to administer if these are seen to overturn the regulatory framework that is established as an act of policy. Given the difficulty in determining the difference between 'large' and 'small' changes in this consequence, and the cumulative effect of 'small' changes, defining the line between policy and regulation is hard to do in practice.

Good policy can be a substitute for regulation in some cases. A policy framework which maximizes the degree of competition, for instance, minimizes the need for extensive and heavy-handed regulation. A policy that forces vertical separation prior to privatization and the introduction of competition, for instance, can reduce the need for heavy-handed or discretionary actions to promote competition such as enforcing and monitoring accounting separation and preventing abuses caused by common ownership of different stages of production.

Colombia has gone a long way towards establishing an overall legal and regulatory framework for the provision of private infrastructure. The impact of increasing competition in these sectors is forcing regulators to take difficult decisions regarding horizontal and vertical restructuring, and setting interconnection prices. In the short run, the introduction of competition seems to actually increase the amount of regulation, although with the hope that once viable competitors are established and the ground rules laid out the need for regulation will diminish or disappear.

In Colombia, although the regulators have primary responsibility for regulation of infrastructure, other government actors play an important role in infrastructure regulation. Indeed, the Central Government itself can effectively over-

ride the regulatory authorities, for instance through the 'Pacto Social' or Social Agreement of 1995 that stated that all changes in prices, salaries and tariffs over the year must be limited to the expected inflation rate for the same period, which for 1995 corresponded to 18%.

### 5.1 Regulatory agencies

One of the major issues to be resolved in designing regulatory agencies is in determining their degree of independence from the government of the day. This independence issue arises in a number of different contexts, of which independent regulatory entities for infrastructure is only one example. Essentially, the act of giving independence to the agency creates a credible commitment on the part of government that it will stick to a particular policy, for example cost-covering tariffs.

The regulatory agencies in Colombia, despite their short history, have been taking on an extremely important role in setting out the 'rules of the game' under which public and private entities provide services, particularly in improving the tariff regime. Unlike regulators in other countries, Colombia opted to create 'quasi-independent' regulatory agencies, the history of which is described in the example below. They are 'quasi-independent' in that ministers are represented on the commissions and they are situated within sector ministries which have budgetary control over them.

Their independence is boosted by the fact that a number of appointments are technocratic, for instance in the electricity commission five of the eight commissioners are technocrats which is meant to give them some independence from the government of the day. The fact that ministers are on the board and that these agencies do not have budgetary independence limit the degree of real independence held by these agencies, however.

Greater independence of the regulatory institutions would give private investors more confidence that they will be fairly treated and the government will not backslide on tariff adjustments or tilt the playing field in favor of state-owned enterprises. The question arises about whether and how this could be achieved. Technically speaking, granting more independence would not be difficult to do: the ministers' positions could be replaced by other technocrats with fixed terms, who are not easily removed except on grounds of misconduct. The budgets of the commissions could be funded by industry levies with budgetary approval conducted at Congressional level.

Whether this should be done revolves around the question of determining the extent to which the agency is allowed the freedom to introduce major shifts in policy. The greater the discretion of the agency, and the wider its power, the less likely it is to be allowed to be independent. Effective independence is likely to be associated with a narrow and focused set of objectives.

#### Example 4: Colombian Public Utility Regulatory Commissions: Experts or Politicians?

To face the new regulatory demands, induced by the increasing private sector participation in the utilities sector in Colombia, the old National Tariff Board was abolished and three modern regulatory commissions were created for telecommunications, water supply and sanitation, and electricity and gas. Their general functions were to foster competition and prevent monopolistic practices. More precisely, these commissions were in charge of setting rate formulas, fees, conditions for actions, and technical and commercial conditions for competitive market development. While promoting competition, commissions could establish general rules, investigate complaints against unfair practices, and order the vertical disintegration and suspension of, for example, output restraints and market segmentation (overlapping with the Antitrust Commission). The composition of these commissions is mixed consisting of government officials and independent experts. The Government's initial proposal was to establish fully independent commissions—independent from both the government and the private carriers—somewhat akin to US regulatory commissions. But some ministers and members of Congress insisted on, and eventually propelled, the creation of more public and thus less autonomous entities. Some ministries argued, for example, that tariff setting could have a strong political impact and hence that responsibility should not be left in the hands of technical experts, since the government would be blamed when their decisions turned out poorly. Likewise, some members of Congress feared that regulations crafted solely by experts would be excessively technocratic, without regional and consumer input. Therefore Congress compromised by approving the above mentioned three semi-independent regulatory commissions.

Source: Montenegro (1995).

The argument against granting more independence relates to the issue of granting major policy decisions to an unelected body. A *quid pro quo* for granting more independence might be for the regulatory agencies to be given less discretion and for their powers to be limited to a narrow set of issues: revising tariffs, setting interconnection rates and ensuring that markets, where existent, continue to operate tolerably well. Even this final point would arguably allow an excessive degree of discretion to a regulatory agency. It might, therefore, only have a limited role in this regard: for instance recommending actions to the ministry, proposing anti-trust investigations or arbitrating changes to market rules.

All major changes, such as forcing greater vertical separation, for instance, would be undertaken by ministries. A pragmatic response, therefore, may be to wait until most of the major changes have occurred, in the industry such as vertical separation of the major companies in electricity and telecommunications, and then increase the independence of the regulatory agencies<sup>22</sup>.

Another important issue is the overlap of existing regulatory entities, in particular between the responsibilities of the three sectoral regulatory agencies and the Superintendencia de Servicios Públicos (SSP). The existing regulatory agen-

cies are meant to be essentially rule-setting bodies: the exercise of administrative power is in the hands of the SSP which has wide-ranging discretion to act against service providers, both public and private, that do not operate efficiently. Part of the issue of enforcement is about ensuring that tariffs are set on the basis of the rules determined by the regulatory commissions. Given the SSP's mandate to act as consumer champion, however, it is not clear that it would necessarily act against municipalities that keep their tariffs artificially low, the possibility discussed in section 4.5. It is also possible that separation of the creation of rules from their enforcement allows the SSP a degree of discretion which is almost equivalent to setting the rules themselves: it could, for instance, interpret the commissions' rules in a particular way or choose not to enforce certain rules. Another element of regulatory reform might therefore be to review the operation of the SSP. It might be the case that the SSP could benefit from a narrower set of objectives.

In addition, the SSP's role is confused by the fact that it has to regulate both public and private entities. In the case of the former, it is likely that it has to play a more active role in ensuring efficient operation because of the lack of incentives to operate efficiently as outlined in section 4. In the latter case, its role can be much narrower: simply ensuring that the private sector adheres to the rules set out by the regulatory commissions. There is a danger that in an environment where the private sector dominates, it will view its mandate as analogous to the role it plays in regulating public sector operators and be excessively intrusive, creating another regulatory risk to private operators.

## 5.2 Transport regulation

One regulatory issue which is under debate is whether Colombia needs a regulatory commission for transport, established on similar lines to the existing regulatory commissions for the other utilities. In transport, the case is not quite as clear-cut as in the other sectors, although regulatory demands may be similar in a number of transport subsectors, for instance reviewing the tolls charged in road and airport concessions. At present, the only country that has a regulatory transport commission is Canada. In some US states, tolls are reviewed by the state Public Utilities Commission. The proposal to create a Transport Commission is, however, being analyzed by the Mexican government.

In transport, where a market does not exist to identify all new investment projects, the need for a sector ministry is stronger than in the other sectors like electricity or telecommunications. In the case of roads, for instance, policy is needed to identify what new roads have to be built or existing roads rehabilitated as part of a multi-modal transport plan. The process of introducing the private sector includes:

- planning and designing the road;
- ensuring environmental licenses and rights of way are available;
- determining the degree of public finance support through guarantees or other financing mechanisms;

- creating the contract;
- awarding the concession contract;
- adjudicating on disputes arising throughout the contract life.

On the one hand, defining what roads should be built would generally be thought of as a policy issue, presumably rightfully conducted by the transport ministry. Even this could be confused by the ability of private companies to submit unsolicited bids and whether or not these proposals should be competitively bid or not. This issue is particularly important when thinking about what role a transport regulatory commission would undertake. Two alternatives could be examined: a relatively minimalist role could be adjudicating on disputes with most of the 'regulatory' work being undertaken by existing responsible agencies such as INVIAS for roads, UAAC for airports, Ferrovias for railways and the Superintendency of Ports for ports. A larger role could be undertaken by giving the transport commission the entire process of regulating concessions, potentially even including the task of introducing private operators other than deciding the projects which should be undertaken.

In the case of transport, however, there will be a continuing need for policymaking to plan the road system and to determine the degree of public financial support that is channeled into the sector, particularly into roads and what form this support will take, an issue which is currently the subject of intensive analysis regarding private toll roads.

## VI. Universal Coverage

A long-term goal of government is to ensure that the poorest sections of society receive affordable access to infrastructure services, particularly electricity and water and sewerage. The current system of ensuring affordable services is through a complex system of cross-subsidies which do not seem to reach some of Colombia's poorest citizens. This system classifies the population into six strata and allows for cross-subsidies between the strata and for commercial and industrial tariffs to be used to cross-subsidize domestic customers. Law 142 limited the degree of cross-subsidization. For instance, the tariff to strata one to three must be at least 50% of the cost of service and there is a ceiling of 20% on the level of contributions from strata five and six and the commercial and industrial customers to the cross-subsidy scheme.

A detailed assessment of the government's poverty alleviation program and its use of subsidies and cross-subsidies in infrastructure services, among others, was undertaken as part of the 1994 World Bank Poverty Assessment Report for Colombia. The report covered the cross-subsidy programs undertaken in energy and water and sewerage. The report concluded that the distribution of subsidies was actually somewhat regressive, i.e. households in the lowest decile received a smaller subsidy than the highest decile. There were a number of reasons for this regressivity. One was that at the time of the report, approximately 58% of house-

holds were classified in a lower strata than would correspond according to their income<sup>23</sup>. The other factors included the fact that relatively fewer poor people were connected to electricity at all. The third factor was that even middle-class customers were being subsidized by the scheme.

On electricity, the report recommended that:

- subsidies should be targeted to lower-income households through rebates on fixed investment charges;
- to limit complementary subsidies on the product to lifeline rates for electricity and natural gas with an overall ceiling that does not disrupt suppliers' finances;
- On tariffs, the study recommended examining two policy alternatives:
  - Maintaining stratification—while incorporating revisions to address problems by gradually readjusting tariffs to economic costs in the kWh charge and allowing a certain degree of price discrimination through fixed charges. This would eliminate some of the major distortions of the stratification scheme.
  - Eliminate stratification altogether, establish a general residential tariff, and complement it with targeted social tariffs for low-income users (the latter tariffs could be fixed charges with capacity limiters).

In water and sewerage, the situation was found to be not as regressive as electricity with regard to the operation of the cross-subsidy system. Subsidies were better targeted than was the case in electricity although there was still a concern that lack of access to water and sewerage was mostly a problem of the poor. The report argued that the government should consider eliminating stratification, establishing a general residential tariff and complementing it with targeted social tariffs for low-income users. It argued that if this was not politically feasible, then the stratification should be revised to ensure it more closely reflects income distribution.

This paper recommends revisiting some of the conclusions of the Poverty Assessment Report with regard to tariffs. The cross-subsidy mechanism is a costly one which creates substantial distortions. Direct transfers to subsidize the connection of poor customers to infrastructure networks, a relatively non-distortionary form of financing for infrastructure, would be better targeted to the poor. Likewise, where there is a concern about affordability of the basic service, a move to direct transfers to customers, for instance through vouchers provided direct to poor customers, on the lines of the schemes for subsidizing poor customers' water bills in Chile would be a more targeted and efficient scheme than the current cross-subsidy scheme.

In sectors where competition is likely to become an increasingly important factor in service provision, particularly telecommunications and electricity, the cross-subsidy arrangements are likely to become increasingly problematic. If the cross-subsidy scheme is maintained in these sectors, it will make sense to ensure that it is only limited to areas of natural monopoly, otherwise the cross-subsidy arrangements will be unwound through competition.

### **Example 5: Chilean Subsidy Scheme in the Water Sector**

Chile replaced its cross-subsidy system with a comprehensive subsidy scheme for low-income households, assisting with the purchase of a variety of public services. Subsidies amount to a total of US\$12-13 million, excluding the administrative cost of the scheme. The program is financed by central government but administered through the municipalities. Subsidies are paid to the public-service operator rather than the household.

In the case of water, the subsidy covers 40-85 percent of the charges for the first 20 cubic meters of consumption. The goal of the scheme is to ensure that water and sanitation services do not take up more than five percent of household income. There are multiple criteria for eligibility including: region, average cost of water, household income and wealth, and family size. Eligibility must be reassessed every three years. Moreover, households failing to pay their share of the bill have their subsidy suspended.

Initially, the onus of proof was laid on low-income households. However, low take-up rates prompted the collaboration of the water companies in identifying needy customers by examining tariff payment records. It is now believed that all eligible households in urban areas are covered by the scheme, that is to say some 20 percent of the population.

The tariff structure in electricity may therefore have to be adjusted to allow the cross-subsidies to be levied on the distribution and transmission use of system charges, not on the overall tariff, or through the use of a tax on customers that opt to take supplies from a company other than the local distributor.

In telecommunications, given the possibility of free entry into both long-distance and local telephony, it is not clear that the cross-subsidy system will be sustainable. A Communications Fund provides for social telephone programs for users that, because of their income level could not afford the full tariff for service. US\$ 135 million is meant to be spent on these social projects. The funding for these programs is through payments from cellular telephone service providers for their use of the frequency spectrum (equivalent to 5% of their gross income) and special charges in the tariffs of basic long-distance telephone service both national and international.

Any residual concessional funding of this sort would be better used to provide lump-sum subsidies to increase connection rates, particularly in water and sewerage where coverage is relatively low.

## **VII. Conclusions**

The main message of this paper is that the government should push harder in three areas: divestiture of existing infrastructure assets, developing the regulatory and competitive environment within which infrastructure services are provided, and ensuring that where the government does play a role in mitigating risks in