

Electricity Sector Reforms in Colombia

Development Strategies: Final Paper

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The Landscape before 1987

Colombia emerged from periods of strife and civil war in the 1940s and 1950s (a period deemed *La Violencia*) through a political grand bargain known as the *National Front*. In 1957, the two most recent former heads of state issued the “Declaration of Sitges” which proposed the joint governance of Colombia by the Conservative and Liberal Parties (to exchanging power every four years). In 1974, populous opposition for the bargain reached its tipping point during the primary election within the Conservative party (who was next in line to take over after the previous four years of Liberal rule). The narrow election of Misael Pastrana over populist candidate Gustavo Rojas (a common political figure who was the general that successfully led the Conservative/Liberal backed coup d’etat in 1953, thereby pulling the nation out of the *La Violencia*) occurred under the mass suspicion of fraud; thus galvanizing popular support against the *National Front*. A new insurgent group, the *M-19* was formed; choosing its name as the date of the fraudulent election (19 APR 1970). Although the bargain was officially disbanded in 1974, the Constitution of 1886 (in effect until 1994) required the partial assimilation of the losing political party into various positions within the new regime, only increasing public perception of corruption and dissatisfaction. Disputes between the government and independent rebel groups (which, in addition to the *M-19*, included the *ELN* and *FARC*) increased as each group claimed that it alone speaks for the the poor and working classes.

Despite the political turmoil, Colombia experience relative fiscal conservatism during this period, which meant it was Colombia was one of the few Latin American nations able to service its debt during the Debt Crisis of the 1980s (otherwise known as *Lost Decade*). However, growth prospects were somber as the increase of labor and capital stocks were exploited inefficiently. It was the determination of the World Bank and other international actors that this was primarily the result of a lack of exposure to international competition and negative intervention by the government [1].

The Reforms of 1987

Background

At the time of the reforms in 1987, the Colombian electrical landscape was one of public ownership. There were seven firms which were involved in generation, transmission, and distribution of electrical service:

- 3 Municipality companies in the 3 main cities (*EEP* in Bogota, *EPM* Medellin, and *EMCALI* in Cali)
- 3 Public Regional companies
- *ISA*, the national public utility

Colombia: Taxonomy of Power Sector before Reform (1994)

Policy	Ministry of Energy and Mines (MinMinas)	National Planning Department (DNP)	Colombian Institute of Electric Energy (ICEL)	Mining and Energy Planning Unit (UPME)
Regulation	Energy Regulatory Commission			
Market	ISA			
Generation	ISA	EPM	EEB	Corelca ESSA
Transmission	ISA	EPM	EEB	Corelca
Distribution	21 ICEL power companies	EPM	EEB	EMCALI
Less 7'000,000 customers				

Although originally created to manage the exchange, ISA 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. Yet this goal was not realized, as individuals preferred to maintain local control of facilities needed to meet demand in their areas. Furthermore, rather than deal with the political costs of raising tariffs its shareholders prevented ISA from charging a bulk tariff which adequately met the economic cost of service; thus leading to unsatisfactory financial performance.

Outcomes

The Power Sector Adjustment Loan from the World Bank included 300 Million USD from the Bank itself and \$1 Billion in additional financing from Japan (with WB managing the process). The reforms were ambitious and included creation of stronger central regulator, increased private participation, reduction of losses (which at this point were at 25%), and higher cost reflective pricing.

The regulating body, the *CNE* did eventually materialize; however, it was delayed significantly. This delay was caused, partially by the extra time required to finish contracting and transfer, in addition to the lack of political motivation once money was out the door. Other agencies were organized as well, such as the *Higher Electrical Security Council* (*Consejo Superior del Sector Electrico*) which was useful in creating dialogue between the sector and economic authorities. However, the lack of the legal and enforcement powers of these agencies limited their capacity to carry out responsibilities.

Increased investment of the private sector was present, but this was mostly a result from the large scale projects that were created with loan money. Prices at this point did increase slowly; however, at levels that were concluded to be at least 17% less than they needed to be to accurately capture the costs of service. Increased generation occurred as well; however, it was more of a curse than a blessing. Because of negative economic shocks (decreases in the price of oil and coffee), the actual demand was much less than forecasted (6% compared to 10%). Thus, overproduction resulted which, because of the inflexibility of hydroelectric power, couldn't be scaled back [3].

These shortcomings of the reform process came to a head in the early years of the 90s with the confluence of two events: unsustainable levels of public financing debt (electricity investment comprised $\frac{1}{3}$ of all public debt at this point) and El Nino climate droughts in 1992. The result was blackouts and rationing of service for many months. The lone bright spot of the reforms was the environmental and social targets of the program, which were exceeded [2].

Why?

Why did these reforms fall short of goals? Part of this question can be answered by exogenous factors: this period saw a large decline in coffee prices; rising inflation, devaluation of currency, and liquidity and solvency issues. All of these factors, when combined with the unsustainability of the current sector financing; unsustainable pricing and public levels financing (the sector itself never contributed more than 5% since 1977). The lack of timely and consistent sectoral financial data meant supervision of the program was also a challenge. However, these factors only tell part of the story (as there were exogenous factors working against the later factors which were able to succeed).

In the project completion report the World Bank states the following:

“Most of the shortcomings resulted from having structured the PSAL without the support of what are now standard Bank requirements for adjustment operations: (a) clear and complementary country and sector strategies; (b) strong ownership of the reform objectives; (c) tailoring the operation to the available implementation and regulatory capacity; (d) avoiding excessive conditionality; (e) obtaining updated financial information; (e) effective creation of a monitoring system; and (f) obtaining appropriate up-front conditionality [2].”

This analysis is important, however, in order to truly understand the causes for lack of success of the PSAL one must look at the lack of regional and municipal commitment to change, which made the institutional reform goals challenging. Some of the local municipalities (e.g. Medellin, and Cartagena) preferred to do without FEN financing (the *Financiera Energetica Nacional*, who managed the World Bank loans) than to comply with the more fundamental conditions of the PSAL. As a result considerable amount of development financing remained undisbursed during implementation. Additionally, the new pricing methodologies which were implemented were delayed and through a regulator with weak regional authority. The prices recommended

by the new *CNE* (like the previous body before them) were seen as an upper limit as to what they should charge (leading to the lower than required pricing increases).

From the national perspective, there was a lack of Federal Government commitment to monitor and carry through with implementation. No real champion of the reforms emerged which made it difficult to build momentum. It is true that there was executive branch support to engage international organizations like the World Bank and to foster more private sector support, but it is clear that other priorities emerged; in short, there was a lack of political and elite cohesion in the country. The national government was led by Liberal President Virgilio Barco who, although he ran on a platform of anti-poverty programs and renewed dialogue with leftist rebel groups, saw his tenure marred by increases in violence. As he moved against the drug traffickers, his popular support waned. A climax to the decidedly fragmented elite bargain culminated in 1989 when presidential candidate Luis Carlos Galan was assassinated (who was, at the time leading comfortably in the polls on a populist platform of new voices and change in administration). This event led to a successful referendum campaign during the 1990 election which demanded the formation of a new constitutional committee (receiving a 96% *YES* vote). The new constitution (which was written primarily by the Liberal Party but with representation from all regions) was composed and adopted in 1991.

The Reforms of 1994

in 1994 the government of Colombia, still dominated by the Liberal party (with a majority in the legislature and control over the executive branch, as they had in all 3 elections since 1986) tried again at energy sector reform. This time, the plan was even more ambitious as the 1987 attempt. A full *Washington Consensus* plan was enacted that, at its pillars, was the *Four Rs*: unbundling, privatization, increased competition and regulation.

Events:

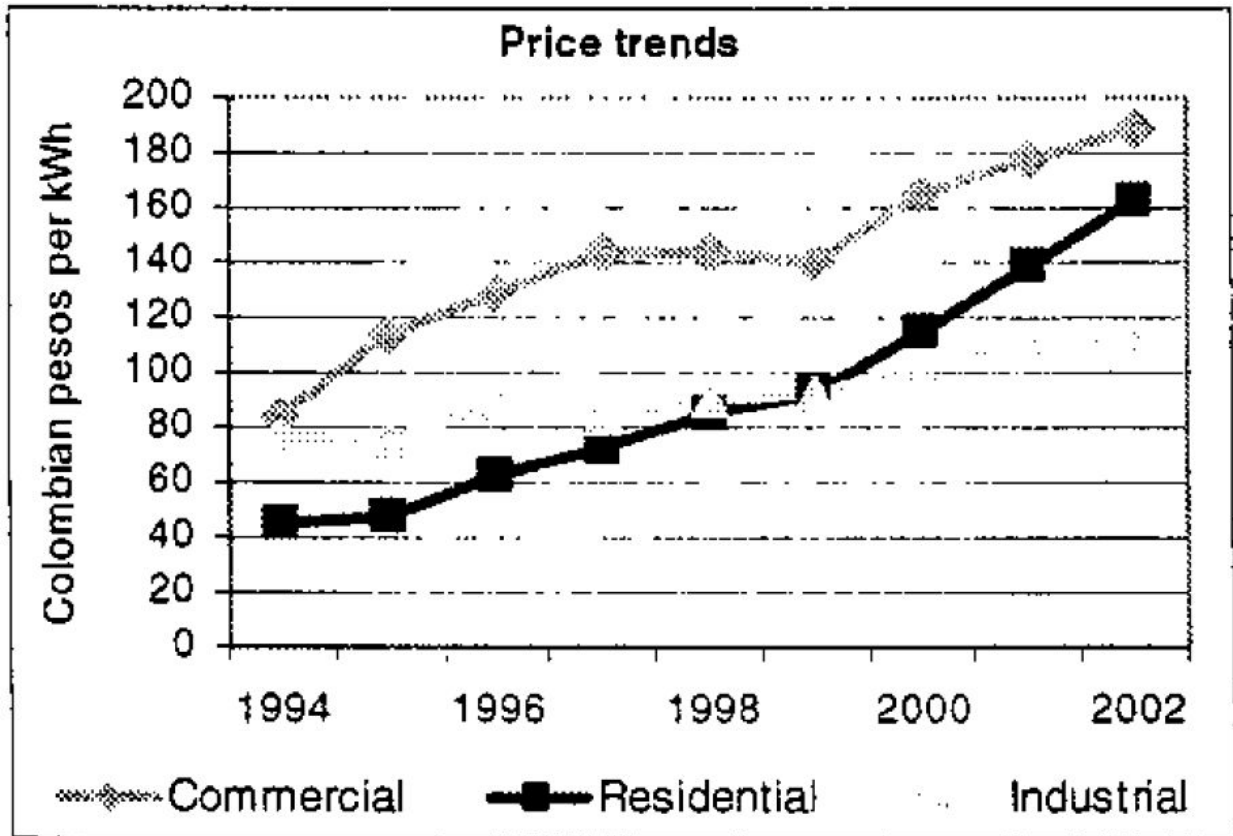
The “Public Utilities Law 142 and 143” were enacted in 1994 with bipartisan support; thus setting the framework for the provisioning of public utilities. They are unique in providing an exceptional level of specificity, “Law 142 is one of the most detail pieces of legislation in latin american history” [4]. They also built upon a lot of the same foundation for utility service specified in the 1991 Constitution (also unusually detailed). The result was fast action which built momentum quickly. This legislation specified:

- “A unified legal and regulatory regime for all businesses, regardless of the property nature.
- A rate-system governed by principles of economic efficiency, which requires the correct allocation and use of resources in a way that guarantees the provision of the service at the lowest economic cost, financial sufficiency and social solidarity.
- A unique and sustainable system of cross-subsidies, applicable to customers of all companies, regardless of their nature and ownership.

- Vertical disintegration of the electricity supply chain.
- Separation of monopolistic activities (transmission and distribution) from the ones where competition was desirable (generation and commercialization). To prevent anticompetitive behavior, surveillance authorities were created.
- Suppression of regional electricity supply monopolies seeking free access to transmission and distribution networks.
- Creation of specialized State agencies according functions: policy, regulation, monitoring and control.
- Contractual freedom for consumers whose consumption levels exceed the thresholds established by the regulator.
- Indicative planning for the generation activity and freedom of investment in generation assets. Mandatory planning for the transmission activity.
- Creation of a wholesale electricity market both for short- and long-term, with the participation of generators, traders and large electricity consumers [8]”

By 1995, much of the institutional setup work was done, primarily by ISA. ISA, which previously managed the interconnection system and owned power plants, was split up into Transmission (ISA) and generation (ISAGEN). The wholesale power market *MEM* (Mercado de Energia Mayorista) had been designed and organized, together with the settlement function, *LAC* (Liquidador y Administrador de Cuentas). The dispatching process, *CND* (Centro Nacional de Despacho CND). had been designed based on bids tendered by producers within the existing dispatching facilities of ISA. In short, the new ISA was given a breath of new authorities (*MEM*, *LAC*, and *CND*) which it capitalized on very quickly.

Within a year of passing Laws 142 and 143, the independent regulator *CREG* (Comisión de Regulación de Energía y Gas) was established, along with a separate Monitoring and Support Body, *SSPD* (Superintendencia de Servicios Públicos). *CREG* was to be the pricing regulator for all customers under .1 MW of demand (contract pricing) and leaves higher demand customers to negotiated pricing (spot pricing). Price reform is transparent and accepted by the decentralized departments.



In 1996 the privatization process begins of smaller firms (such as Central Hidroeléctrica de Betani, Chivor, Termocartagena, and Termotasajero) with partial privatization of larger firms starting in 1997/1998 (Emgesa, Codensa, [both Bogota], Electricaribe, [in the north] and Electrocosta [on the West Coast]). However at the end of the 20th Century momentum for the reforms starts to slow. Andres Arango is elected to the presidency, the first Conservative to hold the office in over 12 years. His campaign platform focused more on political reconciliation with the paramilitary groups (FARC, ELN, and the newly formed AUC) rather than developmental outcomes. Although he did engage in negotiates very soon after taking office, they were slow going despite the creation of a demilitarized zone.

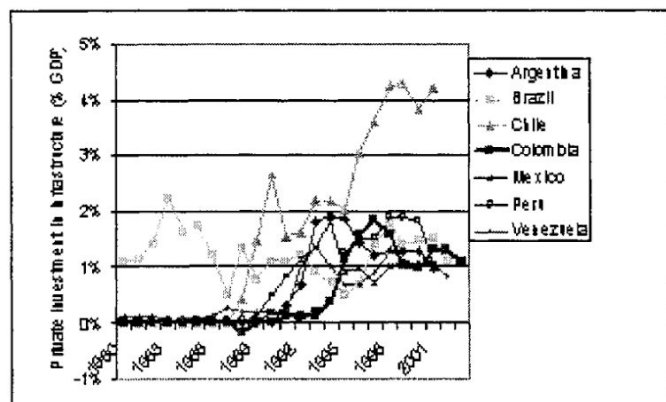
In the late 1990s, an economic recession hits Colombia and demand for electrical service drops. Additionally, there is a rise in violence with terrorist paramilitary attacks on transmission facilities which reduced capacity. Moreover, in 1998 a huge test is given to these new reforms: El Nino. Droughts occur; however, there is no disruption of service during this period (a huge win for the reforms). Interestingly, had consumption not dropped because of the recession, these attacks and El Nino events would have lead to blackouts and rationing. Regionally, these increases in prices from attacks were passed on to consumers; however, CREG stepped in and deviated from its market based approach and set price-ceilings. CREG itself also was subjected to many legal challenges such as Law 812 of 2003 gives some authority to line

ministries from independent regulators (example, freezing of subsidies now under the scope of the MME and not CREG).

These exogenous and endogenous factors threatened the reforms. The lack of demand, destabilizing nature of the non-incorporated paramilitary groups, and economic situation in Colombia deterred foreign and private investors. In 1999 ISA, Transelca, and ISAGEN, and 14 other Distribution firms that the government owns a share in remain public firms. ISAGEN was supposed to be privatized in 1998/1999, but did not take place because of water rights issues and lack of private interest due to recession [4].

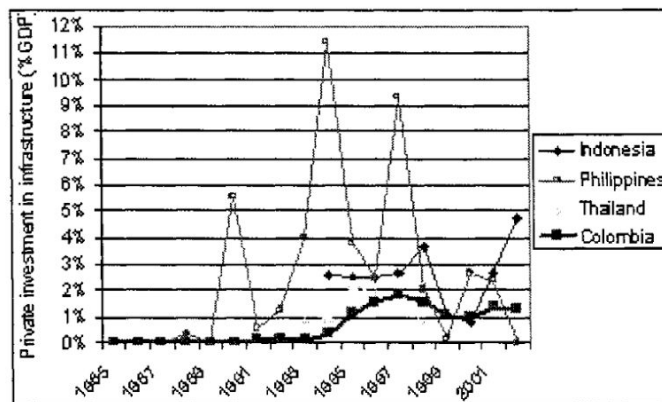
Nonetheless progress is made on the investment front. Again, we see the strength of an internal champion (ISA) and independent regulators. During this period ISA has continued to diligently put in place additional physical components, hardware, and software required for dispatch and account settlement. It additionally supports the investment into new expansion and/or greenfield projects. Unlike other areas in Latin America, only 2% of private investment coming into Colombia is the result of asset divestment (compared to 40-60% in some nations). This is significant as it means that nearly all of the private investment has been for infrastructure expansion or greenfield projects. This is more similar to Indonesia, Thailand, Malaysia, and other east asian nations [5].

Figure 1.4: Private investment in infrastructure, 1980-02



(a) Against Latin American peer group

Source: Adapted from Easterly and Serven, 2003



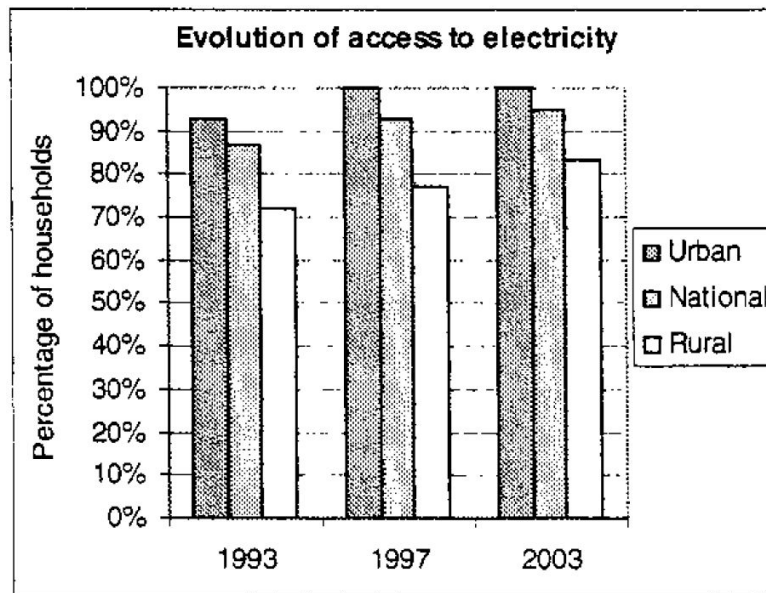
(b) Against East Asian peer group

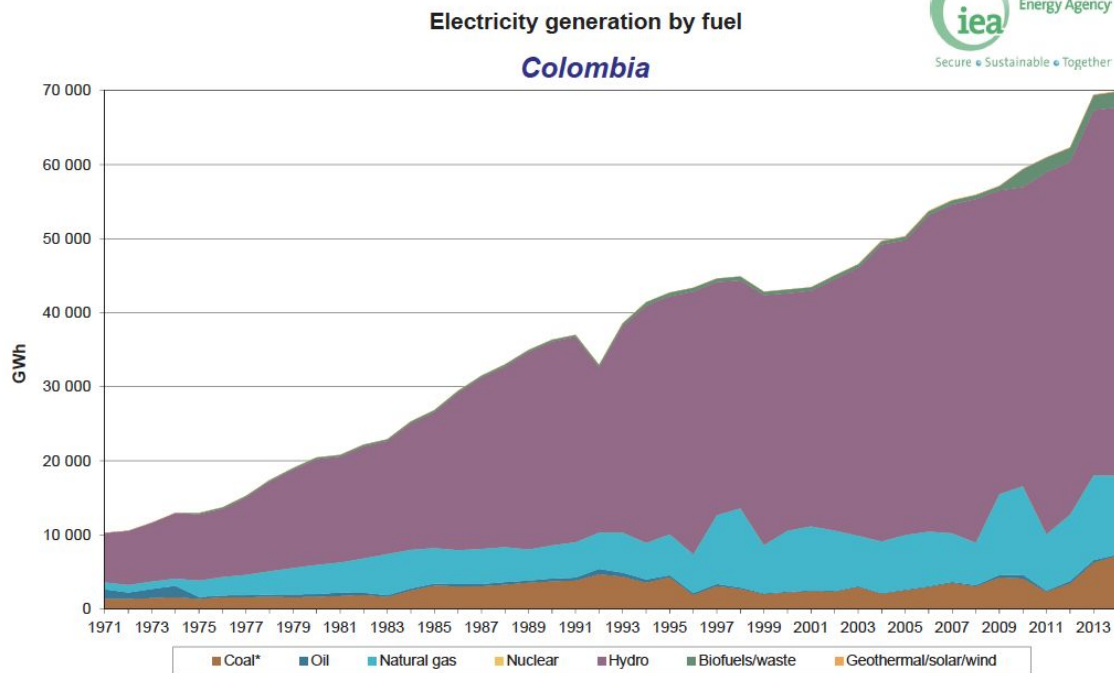
Source: EAP Infrastructure Flagship, 2004

Additional momentum is built in the Colombian electricity sector outside its borders: through a larger and more connected Andean Electrical Grid. In 2001 a Framework for Andean Regional Exchange of Electricity is created. By 2003, transmission connection is made between Colombia and Ecuador and power exchange is commenced. In 2006 another huge milestone for the reforms occurs: the creation of a new wholesale clearinghouse to facilitate easier electricity transactions is created (called XM). In 2009, MOU's and transmission lines are created between Colombia and Venezuela. In 2014, a 3 stage Roadmap for Andean Electrical Integration (SINEA) is endorsed by Bolivia, Ecuador, Chile, Peru, and Colombia (expected

completion in 2022). Currently, additional transmission lines are being constructed between Colombia and Panama (expected completion of 2018).

In general the outcomes of the reforms are quite positive. This is evident by the improvement of electricity access to citizens (up to 97%), a steady increase of generation capacity, raising of prices to reflect the costs (prices nearly quadrupled in this eight year period), and a reduction in losses (down from 25% in the late 80s to 7% in the 2000s) [8].





* In this graph, peat and oil shale are aggregated with coal, when relevant.

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For more detailed data, please consult our on-line data service at <http://data.iea.org>.

Why?

The essence of the success of these reforms is partially a story of leadership, cohesion, and timing. During the attempted 1987 electricity sector changes there was no strong motivation or leadership for action. Yes there was the appeal of low interest loans and the engagement with the international community, but fundamentally, nothing pushed the collective nation forward as a whole. A lack of intensity and urgency allowed regions and municipalities to “kick the can down the road” and not invest any political capital in raising rates or supporting the hard work of privatization because there was always the sense that the national government would always be there to step in and support the system (they wouldn’t let the lights go out). However, after the blackouts of 1992, the situation became much more immediate. Similar to the story of South African electricity reform, it many times takes a crisis to motivate transformative action. There can be no doubt that this event provoked the adoption of rapid change. Strikingly different from South Africa; however, was the lack of union presence in Colombia (which meant a lack of protest).

The increase in political cohesion is striking about this period as well. The new constitution formed in 1991 removes some of the language requiring the incorporation of losing parties in the government while at the same time drawing up the foundation of utility provision in the future. The burden of maintaining electrical service was also specified and decentralized to the local authorities in the document. Thus, if blackouts occurred again, it was them (the

municipalities of Cali, Bogota, Cartagena, etc) and not the central government who would be technically liable. Also present were new political threats to the two largest parties (Liberals and Conservatives). Colombia has done a good job of removing the cost of losing power (a regime exiting power is not at risk of jail time or civil forfeiture) which means that the stakes to “win the election at all cost” are much reduced. However, the increase in violence in the late 80s motivated political re-organization in the face of challenges to the *National Front* type bargaining in the past. After the peace agreement between the rebel group *M-19* in the late 90s, the M-19 Democratic Alliance is formed; a political party which, in 1990, gets more seats in the Legislature than the Conservatives do. This fact no doubt encouraged the Conservatives to go along with the reforms from their political opponents (the Liberals) in the name of self preservation and influence.

The nature of the long history of judicial institutions is also a factor in keeping these commitments by the government credible. Although a nation with a history of violence and unrest, the rule of law has always been a staple of the Colombian system. In 1994, one of the first actions taken by the new ISA was to set up the CNA, for resolving disputes in the bidding process. The creation of the SSPD, the enforcement regulatory body, at this time as well exemplifies the commitment to consistent institutions. The Constitution of 1991 and law 142 of 1994 were meticulously detailed as to avoid any kind of ambiguity which may lead to the delays in implementation (which hindered the 1987 reforms).

Furthermore, the fact that The Colombian legislature passed specific laws (approved by the Executive and Judicial Branches of government) is important. This was not a “promise” by leadership nor an executive action (which can be easily overturned by a new administration), but rather a clear and official set of legally enforceable standards that dictated future actions. This script was followed by a transparent implementing body which was manned by individuals who had spent careers in the energy industry. A testament to the strength and clarity of this legislation is that the institutional framework detailed in the 1994 laws is essentially the same as today. This methodology absolutely contributed to the avoidance of the *Isomorphic Mimicry* that has befallen other nations.

Colombia: Taxonomy of Power Sector (2015)

Policy	Ministry of Energy and Mines (MinMinas)		National Planning Department (DNP)	Ministry of Finance and Public Credit	Mining and Energy Planning Unit (UPME)	
Regulation	Commision for Energy and Gas Regulation (CREG)			Superintendency of Domiciliary Public Utilities (Superservicios)		
Market	XM					
Generation	EPM (21%)	EMGESA (20,7%)	ISAGEN (19,3%)	GECELCA (10,5%)	42 Regional Companies (28,6%)	
Transmission	500 kV lines	230 kV lines	220 kV lines	138 kV lines	115 kV lines	110 kV lines
	Intercolombia (ISA) - 100%	Intercolombia (ISA) - 80%	Transelca (ISA) - 62%	Intercolombia (ISA) -100%	Codensa 17%	Electricaribe 45%
			EPM 31%		EPSA 13%	EPM 42%
		5 Companies 20%	Intercolombia (ISA) - 7%		19 Companies 70%	5 Companies 13%
Distribution	Electricaribe (22%)	Codensa (21%)	EPM (14%)	27 Companies (47%)		
13'591,776 Regulated customers + 5,216 unregulated customers						

Sustaining any gains from reforms requires steering clear of the re-nationalization (or capture) of previously privatized organizations. This is important, not because the Washington Consensus Recipe is a one-size-fits-all solution for all situations, but that such a political power play is, at its best destabilizing, and at its worst, resulting in zero foreign investment other than aid organizations. Colombia has succeeded by disincentivizing and disabling government from this action.

It is true that governments in developing economies have a strong political motivation for nationalize industries: such policy provides more revenue from which agendas can be implemented (to either further an ideology in general or for potentially more populist programs to attract poorer voters). Even failing full nationalization, there are incentives in regards to failures in fair and independent regulation. “Fair” Regulation in this case is defined as a transparent pricing strategy which takes into account costs of production and allows for fair profits to be made. Governments generally interfere with “Fair” and independent regulators in order to ascertain higher profits for the actors (i.e. raising prices artificially) or lowering prices in order to attract votes.

Although the allure of “free money” would be considered an undiversifiable risk (there are short term gains from nationalization), Colombia has so far insulated itself with a policy of

transparent subsidies program. *Cross-Subsidies* were mandated by 1994 Law 143. They specify that, of the six segments based on income of the populous, the top two pay 60% of the bottom two. In the 1991 Constitution of Colombia income redistribution was championed; it is a cultural ethos. The commonly understood system means that a government capture or intervention for a reduction in energy tariffs would have reduced marginal political gains. This is to say that government intervention in the pricing strategy of CREG is disincentivized.

Additionally, there are additional incentives to private investors outside of government commitments. CREG sets prices based on transparent (this word is being used a lot) formulae. Although pricing decisions limit, to some degree at least, the maximum profits which a private energy firm can enjoy, they are not principally in place to restrict profits in general. Raising prices is one way to increase revenues; however, reducing costs is another. Regulators do not put a cap on profits in general, and many firms, more noticeable in the generation space, have been able to obtain considerable and consistent returns. Electricity losses have reduced from 25% to 7%. This success and innovation in turn attract more and more investment. In this way, firms can seek higher profits while even if negative government intervention is present.

Conclusion

In summation, there are still a variety of challenges facing the Colombian energy sector today. Debate over the structure of the system, namely, the function of capacity charges, reliability charges, and cross-subsidies is ongoing (debates about the nuances of the electricity program, not about the core structure as a whole). Additionally omnipresent is the constant generation risk of a majority hydroelectric generating nation (which is extremely susceptible to changing weather patterns). That being said, there is no doubt that the electricity sector reforms put in place in the mid 90s have been effective at increasing access, reducing system losses, encouraging foreign (non-public) and private investment and pushing prices up to levels that are sustainable. These events were able to occur partially because of the high degree of political and social cohesion after 1991, the threat to the largest political parties by outside paramilitary organizations, the lack of protest from trade unions and the presence of strong internal regulatory champions (ISA and CREG).

Citations:

- [1] Roberto Steiner and Hernán Vallejo. "The Economy". In *Colombia: A Country Study* (Rex A. Hudson, ed.). Library of Congress Federal Research Division (2010).
- [2] The World Bank, 1994. "PROJECT COMPLETION REPORT, COLOMBIA, POWER SECTOR ADJUSTMENT LOAN (LOAN 2889-CO)." Retrieved December 2 from <http://documents.worldbank.org/curated/en/368851468023947916/text/multi-page.txt>
- [3] The World Bank Group, 2012. "Colombia: The Power Sector and the World Bank; 1970-1987. Retrieved 20 NOV 2016 from <http://lnweb90.worldbank.org/oed/oeddoclib.nsf/DocUNIDViewForJavaSearch/438C5923376F5DFA852567F5005D8200>
- [4] The World Bank, 2004. "Colombia Recent Economic Developments in Infrastructure (REDI)." Retrieved 29 NOV 2016 from <http://documents.worldbank.org/curated/en/315721468770067432/pdf/303790CO.pdf>
- [5] The World Bank, 2002. "Power Market Development Project" Retrieved 3 DEC 2026 <http://documents.worldbank.org/curated/en/642341468770055597/pdf/multi0page.pdf>
- [6] American Center for International Labor Solidarity (2006), Justice For All: The Struggle for Worker Rights in Colombia, p12
- [7] Benchmarking data of the electricity distribution sector in Latin America and Caribbean Region 1995-2005
- [8] ECSIM (2013). Descriptive analysis of regulation and market structure in colombian power sector. Consulting document prepared for Bancoldex and PTP.
- [9] DNP (2014). Preparation for the national strategy for infrastructure development. Power market. Prepared by Isaac Dyner.
- [10] UPME (2011). Statistical bulletin of mines and energy 1990 – 2010.