

PROFILE

Carlos Pabón-Agudelo is a regulatory economist who has spent nearly three decades analyzing the economics of infrastructure and energy markets, and who is retained as a testifying economic, quantum, and valuation expert in international commercial and investment-treaty arbitration. He has been appointed by both claimants and respondents — private investors, States and state-owned utilities — in disputes before ICSID, the ICC, UNCITRAL and SCC tribunals, and gives evidence in English and Spanish. His opinions address lost profits and but-for market modeling, business and share valuation, expropriation and treaty damages, concession and long-term contract disputes, tariff and regulatory determinations, and the economic interpretation of commercial arrangements. He is Managing Partner and Founder of Infrastructure Economic Consulting, LLC, a Washington, DC boutique he founded in 2016 after nineteen years as a Vice President at a leading international economic consulting firm.

EXPERT WITNESS PROFILE

Forums	ICSID · ICC · UNCITRAL · SCC.
Appointing parties	Claimant and respondent side; private investors, States, state-owned utilities and their counsel.
Languages of testimony	English and Spanish (Portuguese working proficiency; French conversational).
Sectors	Power generation, transmission and distribution · natural gas and oil · mining and coal · roads and airports · water · telecoms · construction.
Based in	Washington, DC.

AREAS OF EXPERTISE

- Damages and quantum
- Business and shares valuation
- Expropriation and treaty damages
- Concession and PPP disputes
- Economic utility regulation
- Market design and restructuring
- Economic contract interpretation
- Regulatory policy and reform
- Lost profits, DCF and but-for modeling
- Country risk, interest and discount rates
- FET, discrimination and stabilization claims
- Tariff and price-adjustment mechanisms
- Rate base, revenue requirement, cost of capital
- Wholesale market and dispatch modeling
- Rebuttal of opposing expert analysis
- Privatization and capital attraction policy

INTERNATIONAL ARBITRATION EXPERIENCE

Beyond the matters listed, the IEC team has acted as an economic and damages expert in the telecommunications, water, and LNG sectors. The list includes both arbitral and judicial proceedings.

Matter	Forum / case reference	Role & appointing party	Year
Gustavo Maeso Lando v. Bolivarian Republic of Venezuela	ICSID Case No. ARB(AF)/19/2	Testifying expert	2022
Companhia de Geração e Transmissão de Energia Elétrica do Sul do Brasil — Eletrobras CGT Eletrosul (f/k/a CGTEE) (Brazil) v. CITIC Construction Co., Ltd. and CITIC International Contracting Co. Ltd. (China)	SCC Case No. V2019/149	Testifying expert	2021
Línea Amarilla S.A.C. v. Municipalidad Metropolitana de Lima	CAIP Case No. 3274	Testifying expert	2019

Matter	Forum / case reference	Role & appointing party	Year
Consultores de la Cuenca del Caribe, S.A. (Carib-Consult) v. ESI Energy and Florida Power & Light Company	Third Room, Civil and Commercial Chamber, Appellate Court of the National District, Dominican Republic — Docket No. 1303-2016-ECIV-00490	Testifying expert	2018
AEI Asia Limited v. Michael Yap Kong Hwee	SIAC ARB 078/09/MM	Consulting expert	2016
Mercer International Inc. v. Canada	ICSID Case No. ARB(AF)/12/3	Consulting expert	2014
Aguaytía Energía del Perú S.R.L. v. Perupetro S.A.	CIAC 50 198 T 625 13	Consulting expert	2014
Isolux Corsán Concesiones S.A. v. Republic of Peru	ICSID Case No. ARB/12/5	Consulting expert	2013
Caravelí Cotaruse Transmisora de Energía S.A.C. v. Republic of Peru	ICSID Case No. ARB/11/9	Consulting expert	2012
Areva NP GmbH, Areva NP SAS and Siemens AG v. Teollisuuden Voima Oyj	ICC	Consulting expert	2010
Aguaytía Energy, LLC v. Republic of Peru	ICSID Case No. ARB/06/13	Consulting expert	2008
ROZ Trading Ltd. v. The Coca-Cola Export Corporation, Republic of Uzbekistan	VIAC	Consulting expert	2006
Fraport AG Frankfurt Airport Services Worldwide v. Republic of the Philippines	ICSID Case No. ARB/03/25	Consulting expert	2003
AES Corporation, Jyoti Structures Ltd. and AES Orissa Distribution Private Ltd. v. Grid Corporation of Orissa	International commercial arbitration, seat: Bhubaneswar, Orissa, India	Consulting expert	2002
PSEG Global Inc. and Konya Ilgin Elektrik Üretim ve Ticaret Limited Sirketi v. Republic of Turkey	ICSID Case No. ARB/02/5	Consulting expert	2002

SELECTED MATTERS IN DETAIL

Opinions delivered as a testifying expert.

- **Gustavo Maeso Lando v. Bolivarian Republic of Venezuela (ICSID Case No. ARB(AF)/19/2).** Seizure of the claimant's investment, revocation of a tax exemption and elimination of the opportunity to earn a return on and of the investment. Quantified damages and economic implications of the expropriation, including country risk and interest.
- **Eletrobras CGT Eletrosul v. CITIC Construction (SCC Case No. V2019/149).** Construction delay claim and associated market penalties. Assessed the claim's economic validity from a regulatory standpoint and showed that the operator's commercial and economic decisions caused and increased the magnitude of the penalties imposed; opined that those choices were driven by the operator's risk profile rather than required by market economics or the plant's technical limitations.
- **Línea Amarilla S.A.C. v. Municipalidad Metropolitana de Lima (CAIP Case No. 3274).** Contractual price-adjustment mechanism and alleged lost revenues. Demonstrated that the claimant's reading of the adjustment clause was contractually and economically unsound, would have produced inefficient outcomes, and that the asserted revenue shortfall was unsupported.
- **Consultores de la Cuenca del Caribe, S.A. (Carib-Consult) v. ESI Energy and Florida Power & Light Company (Appellate Court of the National District, Dominican Republic, Docket No. 1303-2016-ECIV-00490, 2018).** Breach of contract claim arising from a bid to build a thermal power plant in the Dominican Republic. Analyzed the restructuring of the Dominican power sector and the economic basis for the damages claimed and identified methodological defects in the opposing quantification.

Consulting expert engagements.

- **AEI Asia Limited v. Michael Yap Kong Hwee (SIAC ARB 078/09/MM).** Damages arising from a defective power plant and desalination cogeneration project sold to AEI by a private developer.
- **Mercer International Inc. v. Canada (ICSID Case No. ARB(AF)/12/3).** Economic and regulatory analysis of claims of discrimination and unfair treatment under NAFTA; assessment of self-supply requirements applicable to pulp and paper mills with cogeneration capacity, and of the claimant's damages case.
- **Isolux Corsán Concesiones S.A. v. Republic of Peru (ICSID Case No. ARB/12/5).** For the Government of Peru, in a bilateral investment treaty claim: assessment of allegations of bad-faith negotiation and discrimination, and of the claimant's damages.

The parties concluded a settlement agreement in December 2013, and ICSID issued its award recording the discontinuance of the proceeding on 25 March 2014.

- **Caravelí Cotaruse Transmisora de Energía S.A.C. v. Republic of Peru (ICSID Case No. ARB/11/9).** Analysis of the Peruvian concession regime, the economic function of contracting, and the damages arguments advanced by the claimant.
- **Areva NP GmbH, Areva NP SAS and Siemens AG v. Teollisuuden Voima Oyj.** Quantum of damages for lost energy and capacity value arising from delay in the construction of a large generation asset.
- **Aguaytía Energy, LLC v. Republic of Peru (ICSID Case No. ARB/06/13).** Advised the Republic of Peru on comparative transmission-charge regulation, concession industry practice, and quantum, in a claim alleging breach of a Legal Stability Agreement through discriminatory compensation for transmission tolls.
- **ROZ Trading Ltd. v. The Coca-Cola Export Corporation and the Republic of Uzbekistan (VIAC).** Damages analysis in a breach of contract claim.
- **Fraport AG Frankfurt Airport Services Worldwide v. Republic of the Philippines (ICSID Case No. ARB/03/25).** Economic analysis of the concession agreement for the expansion of Ninoy Aquino International Airport.
- **PSEG Global Inc. and Konya Ilgin Elektrik v. Republic of Turkey (ICSID Case No. ARB/02/5).** Damages for breach of a concession contract; led the estimation of lost profits following cancellation of the IPP and assessed the developer's pre-construction business practices.
- **AES Corporation and others v. Grid Corporation of Orissa.** Economic and regulatory assessment of GRIDCO's claim concerning local distribution company - CESCO.
- **AES / Dow Chemical (Elsta, Netherlands).** Liability and damages arising from breach of contract in the sale process of Dow's Elsta power plant.
- **Private investor v. Government of the Dominican Republic.** For the respondent, in a breach-of-electricity-distribution-concession claim: liability and damages, inconsistencies in the claim, and the interaction between the BIT and domestic regulation. Settled on terms favorable to the client.
- **Confidential — hydrocarbon concession, Latin America.** Economic and commercial contract interpretation on a request to modify royalty calculations under an exploitation concession, and assessment of the associated damages claim.
- **Confidential — power plant SPV.** Independent valuation of shares held by an international investor in a power plant special purpose vehicle, including electricity market analysis.
- **Constellation New Energy.** Breach of confidentiality in load management programs: contributed to the expert report and reviewed the opposing damages calculations.

PROFESSIONAL EXPERIENCE

Infrastructure Economic Consulting, LLC (IEC) | Washington, DC

2016 – Present

Managing Partner and Founder

Founder and leader of a boutique practice providing expert testimony and economic consulting in international commercial and investment-State arbitration across the infrastructure sectors — power, oil and natural gas, mining, airports, roads and water — for clients worldwide. Retained by governments, state-owned utilities, private investors and their counsel in matters involving damages and valuation, utility decision-making, concession and construction disputes, market interaction, breach of confidentiality and contract interpretation.

NERA Economic Consulting | Washington, DC

1997 – 2016

Vice President

Economic consultant specializing in the restructuring and regulatory economics of infrastructure projects for governments and private entities in the United States, Latin America, Africa, India and Central Europe; consulting expert in international arbitrations in the infrastructure sector.

- Provided expertise on liability and financial damages in a range of international arbitrations.
- Advised governments and private entities on electricity market development, market restructuring, valuation, regulation, corporate strategy, privatization, capital attraction policy, and the establishment and support of regulatory agencies.
- Analyzed market rules, competition, consolidation of sector reforms, rate design, pricing policy and rate of return.
- Supported private companies, regulatory agencies and system operators on economic regulation, policy analysis and commercial strategy.

- Assessed regulatory frameworks and proposed market-oriented solutions for developing electricity sectors; oversaw regulatory reform programs in several jurisdictions.

Ministry of Finance and Public Credit | Bogotá, Colombia

1994 – 1995

Advisor

Advised senior policymakers on infrastructure public policy; developed regulatory reform proposals for utilities and privatization strategies for infrastructure assets.

- Advised the Minister of Finance on regulation, utility restructuring programs, private participation in infrastructure and the initiation of sector reform.
- Represented the Ministry before the technical committees of the Energy and Gas Regulatory Commission.
- Participated in developing the Electricity Law and related instruments to restructure the sector.
- Developed financial strategies to transfer up to US\$1.2 billion of electricity assets to private investors; structured long-term financing schemes for energy projects and advised on wholesale market contract design.
- Structured the commercial strategy for privatizing the El Cerrejón North Zone coal complex.

Carbones de Colombia (Carbocol) | Bogotá, Colombia

1990 – 1994

Chief, Planning, Evaluation and Negotiation Department

Led economic and socio-economic analysis for the Colombian coal sector, including planning, negotiation and project evaluation.

- Assessed commercial and financial strategies for coal projects above 10 million tonnes per year and coordinated promotion of coal-fired thermal projects of up to 1,200 MW among private investors.
- Participated in the National Energy Plan 1993–2000 and represented the company before the National Energy Commission.

Universidad de los Andes | Bogotá, Colombia

[Years]

Economic Researcher

Public policy and cost-benefit analysis for the Colombian government and multilateral organizations (Inter-American Development Bank and World Bank); research on economic development; support to IDB-sponsored training programs in cost-benefit analysis.

RECOGNITION

- Lexology Index — recommended Arbitration Expert Witness, 2026.
- Lexology Index / Who's Who Legal — Thought Leader, Arbitration Expert Witnesses.
- Jus Connect (Daily Jus) — Arbitration Practitioner of the Week, 2023.

EDUCATION

- M.A., International Public Policy (Energy and Emerging Markets), Johns Hopkins University School of Advanced International Studies (SAIS), Washington, DC.
- Certificate, Business Administration, Georgetown University, Washington, DC.
- M.Sc. in Economics / Economic Development, Universidad de los Andes, Bogotá, Colombia.
- B.Sc. in Economics, Universidad de los Andes, Bogotá, Colombia.

PUBLICATIONS

- "The Economics of Contracts in International Arbitrations," Young Arbitration Review, May 2018.
- "The Use of Economics in International Arbitrations," Kluwer Arbitration Blog, June 2017.
- "Power Sector Reform — Is there a Road Forward?" (with M. B. Rosenzweig and S. Voll), The Electricity Journal, July 2006.
- "Power Sector Reform — Experiences from the Road," (with M. B. Rosenzweig and S. Voll), The Electricity Journal, November 2004.
- "A Proposed Alternative to Locational Marginal Pricing and its Impact on New Generation," (with S. Voll), The Electricity Journal, September 2004.
- "Alternatives to the Elimination of Cross-Subsidies: The Case of Brazil," The Electricity Journal, May 2003.
- "Cross Subsidies — the Economic Impact of the Tariff Realignment in Brazil," The Electricity Journal, December 2002.
- "Power Sector Reform in Brazil — Challenges to Private Investment," Project Finance International, July 2001 (co-author).
- "Technical Codes and Performance Standards for Orissa," NERA, September 1998.
- "Methodology for Estimating the Real Exchange Rate: The Colombian Case," National Planning Department, 1990; Desarrollo y Sociedad, Universidad de los Andes, No. 27, 1991.

- “The Shadow Price of Foreign Exchange in Colombia,” Inter-American Development Bank, 1989; Desarrollo y Sociedad, Universidad de los Andes, No. 24, 1990.

ANNEX

— REGULATORY, POLICY AND ADVISORY ASSIGNMENTS —

Selected non-dispute engagements for governments, regulators, system operators, utilities and investors.

United States power sector

- **Comments on FERC SMD NOPR — Cinergy Services Inc.** Developed market and regulatory concepts for Cinergy's comments, in particular the economic effects of through-and-out rates in FERC's investigation of the justness and reasonableness of such rates in MISO and PJM, and the design of a demand response mechanism.
- **Automatic mitigation procedures.** For a U.S. independent power producer, analyzed price-spike mitigation procedures proposed to FERC and developed an alternative approach based on demand-side bidding, including assessment of proposals by other market participants. Filed before FERC.
- **Brazil countervailing tariff.** Advised a complainant in the ferrosilicon industry on Brazilian electricity subsidies.
- **Niche market study.** For a south-western U.S. utility, led an assessment of why niche markets exist, examples from other industries and energy segments, the longevity of the factors that sustain them, and the actions occupants can take to influence them.
- **Assessment of margins on customized products.** Designed a methodological approach to measure the margin earned by a U.S. utility on customized products.
- **Business strategy for a major south-western U.S. utility.** Evaluated strategic alternatives, modeling the western U.S. power market and quantifying the financial impact of expanding power marketing, investing in new generation and in the assets of a power cooperative, and backward integration into coal and natural gas.
- **Analysis of the competitiveness of power plants.** Identified and assessed technical alternatives available to a U.S. utility to increase plant competitiveness given the marketing and financial mechanisms available in deregulated electricity markets.
- **Due diligence for a private investor.** Analyzed the economic implications of the current and future structure of an asset for acquisition.
- **Analysis of competing generation technologies.** For an international investor, analyzed the economics of wind assets after expiry of assumed initial purchase contracts, and the marginal technology and probable bus-bar costs in the relevant regional markets.

Latin America — infrastructure and energy

- **Commercial strategy for growth in Latin America.** For NERA, designed and implemented an advisory practice focused on electricity, natural gas and international arbitration.
- **Design of commercial and energy strategies — Duke Energy do Brasil.** Led the design of a commercial and energy strategy for the first Brazilian energy auction in 2004, including analysis of auction rules, proposals to improve auction outcomes, review of the company's commercial position, and analysis of pivotal suppliers.
- **Asset and regulatory strategy — Dominican Republic.** Developed an asset strategy for an IPP, including analysis of the regulatory framework, a regulatory strategy to improve the company's position, and analyses to increase asset value.
- **Analysis of technical note — AES-Sul.** Assisted the distribution company in responding to ANEEL's preliminary report in its first tariff revision: revenue requirement, cost of capital, efficiency gains, rate base valuation and benchmarking.
- **Tariff realignment — Duke Energy do Brasil.** For private generators, analyzed proposed tariff rules and their effect on the large industrial segment, and developed economically grounded mechanisms to eliminate cross-subsidies and introduce efficient price signals.
- **Analysis of revitalisation measures.** For an international investor in Brazil, analyzed newly issued regulatory rules and proposed efficient alternatives on distribution and transmission tariffs, promotion of new generation, governance of the system operator, institutional restructuring, consumer issues, unbundling and cross-ownership.
- **Separation of distribution and retail segments.** For Duke Energy, conducted an international survey of unbundling experience, elimination of cross-subsidies, distribution tariff determination and retail divestiture, as the basis for discussion with government.
- **Segmenting the Brazilian electricity market.** For Duke Energy, led a position paper assessing market segmentation against the objectives of reform and its effect on investor willingness to commit capital, identifying flaws in the government's proposals and offering alternatives.
- **Barriers to purely private investment in Brazilian generation.** Advised Duke Energy on Californian and Brazilian market design and regulatory or implementation problems that discouraged generation investment.

- **Tariff and regulatory analysis — Bandeirante Energia S.A.** Assessed the company's internal tariff capabilities, proposed regulatory arrangements, built a model to calculate approximate revenue requirement for alternative test years, and analyzed the results from a regulatory perspective.
- **Regulatory analysis — Elektro, Eletricidade e Serviços S.A.** Led analysis of tariff issues: data collection for revenue requirement estimation, model development for alternative test years, sensitivity analysis, cost of capital and capital structure methodology, and treatment of revenue requirement components and their impact on financial performance.
- **Draft resolutions on tariff issues — ABRADEE.** Advised the association of distribution companies on ANEEL's draft resolutions under Public Audience No. 007/2000 concerning tariff revisions, readjustments and extraordinary revisions.
- **Training in energy commercialisation — Guaraniana Group.** Coordinated technical training for executives on corporate energy objectives and strategy, market environment, strategic use of utility assets, the effect of regulatory and structural arrangements on trading companies, risk management and organisational design, and the Californian experience, including visits to U.S. trading floors.
- **Simulation of revenue requirement — AES companies.** Determined tariff revenues, rate base and cost of capital; simulated the revenue requirement under rate-of-return regulation with sensitivities on test year, O&M, cost of capital, capital structure, rate base valuation and treatment of non-concession activities.
- **Economic-financial equilibrium (EFEQ) — AES distribution companies.** Conceptual analysis of Brazilian distribution concession contracts to define EFEQ from an economic perspective, and design of a practical approach to determining it for the contracts and the firms.
- **Design of the “X” factor methodology — Eletropaulo.** Developed the conceptual approach to determining the X factor under Brazil's performance-based regulation, and the utility's position for discussion with the regulator on recovery of missed revenues.
- **Tariff regulation and strengthening programme — ANEEL.** Developed regulatory and economic principles for tariff setting and procedures for ordinary and extraordinary tariff revisions, and an implementation plan to improve non-tariff aspects of economic regulation.
- **Commercialisation of ancillary services — ONS.** Developed recommendations for the commercial procurement of ancillary services in Brazil, including an international survey and a Brazil-specific economic framework.
- **Wholesale electricity market analysis — Brazil.** For three distribution companies, reviewed the proposed structure and market rules of the wholesale market to resolve contested points and ensure coherent and efficient operation.
- **Distribution tariffs for retail wheeling customers — ANEEL.** Analyzed alternative methods of deriving distribution tariffs, reviewed proposed rules, analyzed competitive provision of revenue cycle services, and surveyed retail wheeling in thirteen U.S. states and other countries.
- **Electricity–telecommunications convergence — ELETROBRAS.** Surveyed international convergence experience and developed a regulatory and organisational strategy for the transmission company's entry into telecommunications.
- **Privatization of COSERN.** Valuation of the distribution company for sale, assessment of new business opportunities, and evaluation with Brazilian advisers of the impact of sector regulation on market value.
- **Regulatory reform in Latin America — IDB.** Evaluated power and natural gas regulatory frameworks in selected Latin American countries; developed a conceptual framework for reform and privatization, compared it against experience in Argentina, Bolivia, Brazil, Chile, Colombia, Peru and El Salvador, and recommended IDB lending and technical assistance policy.

Africa and Central Europe

- **Regulatory review — Cameroon.** For a private investor, managed a review of the Cameroonian regulatory framework to identify mechanisms to improve the financeability and sustainability of the electricity sector.
- **Market design — Regulatory Office of Slovakia (RONI).** Supported the redesign of the wholesale electricity market in the context of privatization, including market rules and the regulation of transmission and generation. Co-led the specification of the transmission price regulation formula, the price review methodology and process, revenue requirement calculation, and guidelines for cost-reflective transmission tariffs and non-discriminatory network access.
- **Regulation of electricity distribution — Slovakia.** Designed a new price regulation regime for distribution companies, including the recommended regime, end-user and access price formulas, and revenue requirement calculations for three distribution companies.

India

- **Structural power sector reform — Orissa and Haryana.** Designed and developed the regulatory framework for power sector reform: analysis of legislation, regulations, licences and guidelines; design and delivery of on-site regulatory training; and on-site advice on competitive procurement, performance standards, consumer affairs, regulatory economics, internal organisation and operating procedures.