

Arvid E. Kruze

International Development Consultant

- Power Industry Specialist
- Financial and Economic Analyses
- Hydro and other RE Projects
- Electricity Tariffs
- Monitoring & Evaluation
- Team Leader and Project Management



QUALIFICATIONS SUMMARY

Arvid Kruze is a power industry specialist, with expertise in economic, financial, policy and regulatory issues. Among other areas, this includes policy analysis, economic regulation, electricity tariffs and associated costing, financial/ economic analysis, corporate/ strategic planning, and performance evaluations of energy projects. He combines advanced academic credentials with over 40 years of experience, particularly on development projects.

He has served as Team Leader on technical assistance projects in Armenia, Bosnia-Herzegovina, Georgia, Kosovo, Nigeria, Azerbaijan, Papua New Guinea, Afghanistan, India, Turks and Caicos Islands, and regional projects in central Asia and Africa. Additionally, he has provided specialist input to development projects throughout the world as an expert consultant. Having worked extensively in emerging economies, he has faced many of the issues and challenges of developing countries with respect to electricity pricing, increasing access to energy and developing clean renewable energy resources. His international experience includes projects in Afghanistan, Armenia, Azerbaijan, Belize, Bosnia-Herzegovina, Botswana, Canada, China, Egypt, Ethiopia, Georgia, Ghana, Haiti, India, Jamaica, Kazakhstan, Kenya, Kosovo, Kyrgyzstan, Madagascar, Malawi, Mongolia, Mozambique, Nepal, Nigeria, Pakistan, Palestine, Papua New Guinea, Philippines, Russia, Saudi Arabia, Senegal, Seychelles, Tajikistan, Tanzania, Thailand, Tunisia, Turkey, Turks and Caicos Islands and Uzbekistan. He has also worked on regional projects in the Caribbean, central Asia and eastern Africa.

EDUCATION

MBA, McGill University, Montreal, 1979.
B. Eng., (Mining) McGill University, 1976.

PROFESSIONAL HISTORY

1996 to date: Independent consultant to electric utilities, consulting firms and international donors active in the energy sector (a client list is provided at the end of this CV). Worked on the following projects, among others:

- Professional services to TetraTech (Quebec, Canada) in assisting the Millennium Challenge Corporation (MCC) in carrying out activities related to the five-year \$550 million MCC Power Compact between the Governments of the USA and Senegal. Provided advice related to electricity tariff reform in the country and developed proposed tariffs for third party access to the transmission and distribution systems (ongoing since June 2020).
- Team Leader on the final performance evaluation of USAID's Market Liberalization and Electricity Trade (MLET) program in Armenia. Led a four-person team in conducting the evaluation of a technical assistance program focused on electricity market liberalization and enabling legislation/regulations, energy sector planning and facilitation of cross-border trade. Conducted through

PROFESSIONAL HISTORY (continued):

International Development Group, USA (November 2022 to June 2023)

- Technical Advisor/ Subject Matter Expert in the evaluation of technical assistance provided in the Caribbean area over the 2014-2022 period by the Bureau of Energy and Natural Resources (ENR), US Department of State. The objective of the work was to assess the effectiveness of ENR assistance activities in support of a loan guaranty program directed at clean energy projects. Provided technical input on renewable energy technologies, the Caribbean renewable energy market, the legislative and regulatory environment and contributed to the evaluation on effectiveness issues. Undertaken by DevTech Systems, USA (October 2022 to June 2023).
- Team Leader on a project undertaken for the Common Market for Eastern and Southern Africa (COMESA) for developing model standards for solar products and a model common customs tariff framework for solar products, followed by the provision of technical assistance support to certain Member States of COMESA. Led a team of three other experts in performing the work. Conducted through VisionRI, India (ongoing since April 2022).
- International Power Sector Consultant in aiding the Republic of Yemen and the Kingdom of Saudi Arabia (KSA), particularly: (i) analyzing the status of the electricity supply industry in Yemen and providing recommendations for gradual reform of its regulatory, policy and institutional framework and (ii) developing a monitoring and evaluation (M&E) plan for the KSA oil subsidy program to Yemen. Conducted through Pragma Corporation, USA, as part of the USAID funded Economic Recovery and Livelihoods Program (2021-2023).
- Evaluation and economic/ financial expert in preparing three Project Completion Reports (PCRs) for the Asian Development Bank (ADB). Projects have included the rehabilitation of the 1,200 MW Toktogul hydropower plant in Kyrgyzstan, rehabilitating/ upgrading a major portion of the power distribution system of Azerbaijan and a regional power transmission improvement program in Tajikistan. Specifically, undertook *ex-post* economic and financial analyses of the projects and provided input to the PCRs regarding relevance, effectiveness, efficiency and sustainability of the projects (2020- 2021).
- International Tariff Expert in developing an electricity pricing rationale and strategy for Nepal Electricity Authority (NEA). The objective was to assist NEA in formulating an electricity pricing methodology and to recommend a detailed tariff structure and implementation plan for pricing electricity in the near to medium term. Conducted through the Accelerating Public and Private Investment in Infrastructure Component (APPIIC) program managed by IMC Worldwide and funded by the Department for International Development (DFID), UK (2019-2020).
- Team Leader on a Cost-of-Service Study for the Government of Turks and Caicos Islands, British West Indies. Services included a cost-of-service analysis of the local electric utility's costs conducted for the government regulatory authority, tariff implications, a benchmarking analysis and a prudence assessment, all conducted in connection with a tariff increase application submitted by the utility. Undertaken through BDR North America, Canada (2019).
- International Financial Expert on the Floating Solar Energy Development Project in Afghanistan, Azerbaijan and Kyrgyzstan, financed by the Asian Development Bank (ADB). Conducted financial analyses of the feasibility of developing floating solar PV plants of about 20 MW, which, among other outputs, included a financial model to derive required feed-in tariff levels to meet specific financial performance targets. Undertaken through OCA Global, Spain (2018-2022).
- Tariff Expert on the project Roadmap for Tariff Reform for Improved Sector Sustainability, Uzbekistan, financed by ADB. Provision of expert advice on electricity tariff setting on a project that aimed to assist the government and the country's vertically integrated power utility establish a cost recovery tariff and optimize the tariff structure, which would help in meeting the financial needs for

PROFESSIONAL HISTORY (continued):

- the independent and efficient operation of the electricity supply industry. Conducted through Corporate Solutions, UK (2018-2019).
- Power Sector Expert on the Impact Evaluation of the MCC Power Sector Revitalization Program in Malawi, undertaken by Social Impact, Washington, DC. Provision of input on a multi-year project to assess the impact of MCC's \$350 million investment program in infrastructure and associated power sector reform program, as well as related advice on technical, policy, market, regulatory, economic and financial issues (2014-2021).
 - Team Leader, End-of-Project Performance/ Formative Evaluation of the Casa-1000 Secretariat. This was the major component of the USAID financed Energy Links Project in Central Asia that provided central coordination and high-level leadership in support of the implementation of CASA-1000, a transmission project linking Kyrgyzstan, Tajikistan, Afghanistan and Pakistan. Led a three-person team in conducting the evaluation. Conducted through Mendez England and Associates, USA (2018-2019).
 - Energy Expert for the mid-term performance evaluation of the Governing for Growth (G4G) Project, Georgia, financed by USAID. As Energy Expert, evaluated activities undertaken in the energy and water sectors of the project, which centered around the cross-cutting theme of public-private dialogue (PPD). Conducted through Mendez England and Associates, USA (2018).
 - Regulatory Expert on a comprehensive Tariff Study and Tariff Plan, undertaken for the Millennium Development Authority/ Millennium Challenge Corporation (MCC) and the Public Utilities Regulatory Commission of Ghana. Specific services included advice and support in detailed cost of service analyses of the power system's generation, transmission and distribution functions, tariff design at all levels of supply (generation feed-in, transmission and retail supply), development of an automatic adjustment mechanism, pricing of transmission ancillary services and distribution/ retail unbundling. Undertaken through Fichtner, Germany (2016-18).
 - Tariff Specialist on the ADB financed Regional Power Transmission Project - Sector Operational Performance Improvement, Tajikistan. The tariffs component of the project was to develop tariff methodologies for an unbundled power sector comprising generation, transmission and distribution entities, with the aim of achieving cost recovery for the country's electricity supply industry. Specific work included the development of a tariff policy, tariff methodology, financial forecasting and derivation of revenue requirements, a cost-of-service study and tariff design. Conducted through Corporate Solutions, UK (2013-2017).
 - Energy Economist on the World Bank financed project Development of Renewable Energy (RE) Sector in Turkey. The general objective of the project was to enhance Turkey's renewable energy sector in line with European Union energy priorities and strategies. As part of this project, the economic component entailed the examination of renewable energy pricing issues for the country compared to alternative energy sources, analysis of existing support mechanisms and subsidies to renewable energy, recommendations on possible alternative support mechanisms, and economic analyses of various renewable energy alternatives and scenarios. Conducted through MWH Global, Turkey (2016-17).
 - Economic and financial specialist for ADB in preparing a Project Completion Report for the Nurek Switchyard Project, which entailed the replacement of a switchyard for the 3,000 MW Nurek hydropower plant in Tajikistan. Conducted an ex-post assessment of the project from an economic and financial standpoint. Engaged directly by ADB for the work (2017).
 - Team Leader for the mid-term performance evaluation of the USAID/ Georgia Enhancing Capacity for Low Emissions Development Strategies (EC-LEDS) Clean Energy Program, carried out by Mendez, England & Associates, Washington, DC. Led a four-person team in conducting an

PROFESSIONAL HISTORY (continued):

evaluation of a program designed to help the country develop a strategy for reducing greenhouse gas emissions towards the development of intended national determined contributions (INDCs) (2015-16).

- International Rural Electrification Specialist on a cluster evaluation of seven previous and ongoing rural electrification projects across Africa that have been financed by the African Development Bank (in Benin, Gambia, Mozambique, Ethiopia and Tunisia), to gain an appreciation of their collective relevance, effectiveness, efficiency and sustainability for the purpose designing similar projects in the future. Engaged directly by the Bank (2015-16).
- Provision of advisory services to the Nigerian Electricity Regulatory Commission (NERC) as Senior Tariffs Adviser through the Nigerian Infrastructure Advisory Facility (NIAF), funded by DFID and operated by Adam Smith International (UK). The services were focused on recommending improvements to NERC's Multi-Year Tariff Order (2015).
- Financial and Economic Specialist, Azerbaijan Power Distribution Investment Project, a \$150 million investment in distribution facilities of the government owned electric utility, Azerenerji. Funded by the ADB, the work included an assessment of Azerenerji financial performance, borrowing capacity and financial management capabilities, as well as economic and financial analyses of the proposed project (2014-15).
- Financial Specialist in the Power Transmission Enhancement Investment Program Tranche 4, Pakistan - a \$230 million investment in power transmission facilities being financed by ADB. The work, under subcontract to SMEC (Australia), entailed a financial analysis of the project in accordance with ADB guidelines, involving a financial management assessment of the government owned transmission company, financial evaluation of the project, development of financial projections and, analysis of historic and expected future financial performance of the company (2014).
- Senior Technical Expert on a data-gathering mission to Tanzania and Ethiopia in connection with the US Government's Power Africa initiative, funded by USAID and undertaken by Pragma Corporation, Washington, DC. Led a three-person team in collecting information to be used for Power Africa's first Annual Report (2014).
- Senior Energy Expert and Team Leader, Performance Evaluation of USAID's Regulatory and Energy Assistance Program (REAP) in Bosnia-Herzegovina, undertaken by Social Impact, Washington, DC. Led a three-person team in conducting an evaluation of a project designed to help the country meet the provisions of the Energy Community Treaty of Southeastern Europe in integrating its electricity market into that of the rest of Europe (2013).
- Economic and Financial Specialist on a feasibility study for the rehabilitation of the Golovnaya hydropower station, Tajikistan, funded by the ADB and undertaken by Corporate Solutions, UK. Conducted an economic and financial assessment of the project for potential ADB financing in accordance with ADB guidelines. This included economic and financial analyses, a financial management assessment of the executing agency, and a financial forecast of the entity's pro-forma financial statements (2013).
- Senior Advisor on a study undertaken by Econoler International (Canada) to study the impact of electricity tariffs on poverty and the social situation in Côte d'Ivoire. Provided technical input on electricity tariffs in a largely socio-economic analysis of electricity tariffs and proposed tariff increases (2012-14).
- Lead Evaluation Specialist, evaluation of the USAID Energy Security and Regional Integration project, Armenia. Led a team of two in conducting an evaluation of the results of a three-year project

PROFESSIONAL HISTORY (continued):

that aided in three priority areas in the development of the Armenian energy sector, including nuclear power, renewables and regional integration. Conducted through Social Impact (2012).

- Team Leader, USAID Programmatic Impact Evaluation of the Energy Sector in Kosovo. With a team of three, undertook an impact evaluation of a variety of USAID financed energy sector projects in the country over the previous five years. Conducted through Mendez, England & Associates (2012).
- Energy Sector Economist, as a part of transaction advisory services provided by CPCS to the Government of Nigeria for the privatization of 4,775 MW new generating facilities and associated transmission and distribution investments made in power facilities under the country's National Integrated Power Program. Provided an assessment of current demand projections and the ability of the new generating capacity to meet this demand (2012).
- Economic and financial specialist, in a project to promote the development of renewable energy technologies in Azerbaijan, including wind, solar and biomass. Specific tasks included: i) international cost comparisons, ii) estimates of likely costs in Azerbaijan and iii) development of a methodology for assessing economic and financial viability of selected projects, which included, among other sub-tasks, the derivation of feed-in tariffs. Contracted directly with UNDP (2011).
- Team Leader, Economics and Finance, as a part of transaction advisory services provided by CPCS for the privatization of successor companies created out of the Power Holding Company of Nigeria. Led a team of professionals in assessing the current state of the industry and providing recommendations in areas of policy, trading arrangements, regulation, finance and tariffs, to facilitate the privatization of 16 generation and distribution companies, as well as carrying out business valuations for each company (2011-12).
- Economic and financial specialist in the review of a feasibility study for undertaking a \$300 million investment in various power facilities operated by the Electricity Supply Company of Malawi. Conducted for the Millennium Challenge Corporation through Sterling International Group, USA (2010).
- Senior advisor on an electricity tariff study undertaken for the Ministry of Energy, Botswana. The work comprised several studies and analyses, including benchmarking of electricity prices and pricing methodologies worldwide, recommendations for a pricing methodology suitable for Botswana, determination/ forecast of industry revenue requirements, a cost-of-service study and retail tariff design. Conducted through CRISIL Risk & Infrastructure Solutions, India (2010-11).
- Economic and financial expert on the development of the Energy Policy 2010-2030 for Seychelles. Provided advice on the document and input on economic and financial elements contained in the proposed policy, which was subsequently adopted by the Government. Engaged directly by UNDP, Mauritius (2009-10).
- Team Leader and Distribution Planning Expert on a project preparatory assistance study conducted in Azerbaijan for availing of a \$500 million credit facility available from the ADB for investment in new electricity distribution facilities. Primarily responsible for leading a team of technical experts in project definition, cost estimation, economic/ financial analysis, and due diligence on environmental and social aspects, as well as providing advice to Government on policy matters that would lead to the development of a more commercially viable power sector. Conducted through VisionRI, India (2009-11).
- Individual consultant to the ADB for designing a rural electrification project in Papua New Guinea. Analyzed alternatives for grid extensions in selected areas of the country that would benefit from newly constructed hydropower facilities, as well as analyzing off-grid possibilities in the form of solar-based lighting (2009).

PROFESSIONAL HISTORY (continued):

- Tariffs expert on a feasibility study on the possible adoption of electricity tariffs featuring a provision for interruptible power, under Saudi Arabia's National Energy Efficiency Program. Conducted for the Saudi Electricity Company through Econoler International, Canada (2008).
- Chief, Financial Analysis, on feasibility studies conducted for the Kohala and Karot hydropower projects, Pakistan, by Snowy Mountain Engineering Company (SMEC), Australia, for the Water and Power Development Authority, Pakistan. Responsible for economic and financial analysis of the projects and leading a team in undertaking the work (2008-10).
- Economic Specialist on a study to examine the feasibility of introducing Daylight Saving Time in Saudi Arabia conducted for the Ministry of Water and Electricity, Saudi Arabia, through Econoler International. Analyzed the likely benefits and costs of implementing the program and presentation to senior Government officials (2008-10).
- Team Leader and Power Sector Specialist, on the Power Sector Development Plan Project, Papua New Guinea, funded by the ADB and conducted through VisionRI (India). Main activities on this project included: i) a market demand forecast, ii) an assessment of power supply options, including hydropower and other renewable energy options such as solar, iii) review of the country's policy, legal and regulatory environment, iv) preparation of selected pre-feasibility studies, v) drafting a power sector operational program, vi) capacity building and vii) ensuring the support and involvement of all stakeholders and policy makers (2007-09).
- Institutional analysis of the Ministry of Energy, Mozambique, funded by the World Bank. The main purpose of this assignment as an individual consultant was to assess the organizational needs of the Government of Mozambique to accommodate the development of several power mega-projects in the country, and to address policy issues related to the implementation of these projects (2008).
- Team Leader and Economist, on the Small to Medium Hydropower Development Project, Afghanistan, funded by ADB. Led a team of multi-disciplinary experts on this technical assistance project to ultimately deliver feasibility studies on 5 hydro projects in the 1 MW to 10 MW range and provided policy advice for attaining a more operationally efficient power sector. As Economist, conducted market demand forecasts in the areas served by the projects, estimated related benefits based on willingness-to-pay, and performed the requisite cost-benefit analyses. Conducted through Engconsult, Canada (2006-07).
- Tariffs expert on a project for the European Bank for Reconstruction and Development (EBRD) as part of its due diligence for a loan to the Federal Grid Company (FGC), Russia, conducted through Fichtner (Germany). The project entailed an analysis and critique of the tariff structure of the FGC, examination of certain key performance indicators, and recommendations for changes in the tariff methodology with a view to incorporating incentives for performance improvement (2005-07).
- Study on Interruptible Power Contracts, Egypt. Retained as an expert by Econoler International (Canada) on a UNDP funded study to develop contractual arrangements between the country's power system operator and large customers for different types of interruptible power (2006).
- Tariffs and cost of service specialist on a tariff study conducted in Kenya for the Electricity Regulatory Board, conducted by Fichtner with World Bank funding. Responsible for the derivation of the long run marginal cost of supply and advice on tariff and financial issues particular to the project (2006).
- Tariffs expert on a project to establish and launch the Palestinian Energy Regulation Commission, carried out by Nexant (USA), and funded by the World Bank. The tariff component of the work included the development of a tariff methodology, including revenue requirements, cost of service

PROFESSIONAL HISTORY (continued):

- and tariff structure, to be implemented by the distribution utilities serving the state of Palestine (2005).
- Tariffs specialist, Cost of Services Study, funded by the Water and Power Development Authority (WAPDA), Pakistan. Led a study undertaken by a local partner in conducting cost of service studies and the derivation of cost-based tariffs for all levels of electricity supply, including generation, transmission and distribution. Conducted through Acres, Canada (2004-5).
 - Team Leader, Tariffs, Energy Infrastructure Services Project II, Uttar Pradesh, India, funded by the Canadian International Development Agency (CIDA) and conducted by AMEC and Acres, Canada. Provision of assistance on financial, tariff and other regulatory matters to the Uttar Pradesh Power Company Limited, on a project designed to assist and train the utility's staff in corporate planning and tariff submissions. Led a team of Canadian experts and Indian counterparts in undertaking corporate financial forecasts, cost of service studies, development of more cost reflective tariffs and, tariff submissions (2002-05).
 - Electricity tariffs specialist on a regulatory framework study, conducted for the Ministry of Economic Development, Azerbaijan. Developed tariff principles and an implementation plan for electricity tariffs on this World Bank financed project to help in establishing a regulatory authority for the country's energy sector, undertaken by Nexant, USA (2003-04).
 - Economist and financial specialist in the assessment of the Inginiyagala hydropower rehabilitation project in Sri Lanka conducted by AMEC (Canada) and funded by CIDA. Home office work included estimating the project's benefits based on avoided costs, an economic analysis of the project from the perspective of the national economy of Sri Lanka, and financial analysis of the project's affordability to the Ceylon Electricity Board (1999 - 2003).
 - Economic and financial specialist on a 500 kV interconnection study, conducted for the Sichuan Electric Power Corporation (SEPC), China. Undertaken by Dessau Soprin (Canada) and financed by CIDA, the study analysed the economic and financial feasibility of a 500 kV line built to evacuate lower cost power in Sichuan Province to eastern China (2003).
 - Financial and tariffs advisor to the SEPC, China, in the development of a strategic plan for the utility. The work conducted by Dessau Soprin (Canada) and funded by SEPC, included training and advisory services to SEPC planning staff (2000-2004).
 - Financial and tariffs specialist, Energy Infrastructure Services Project, Madhya Pradesh, India, funded by CIDA and conducted by SNC-Lavalin (Canada). Aided on financial, tariff and other regulatory matters to the Madhya Pradesh State Electricity Board as part of a larger study to help the utility develop its corporate planning function (2001-02).
 - Tariffs specialist, providing advice and guidance in areas of financial forecasting and development of tariffs, on a study to assist the Palestinian Energy Authority in developing a modern legal and regulatory framework for the power sector of Palestine, conducted by AMEC (Canada) with World Bank funding (2001-02).
 - Financial analyst in the creation of a strategic plan for the start-up of a transmission company serving Palestine conducted by SECOR Conseil Inc. (Canada) and funded by the World Bank. Conducted a financial forecast and developed a proposed code of accounts for the prospective utility (2001).
 - Tariffs specialist on the Regional Energo Pilot Project in the Russian Republics of Komi and Samara conducted by AMEC (Canada) and financed by CIDA. Specific tasks on this project designed to assist the utilities in becoming more commercially viable included the development of tariffs for

PROFESSIONAL HISTORY (continued):

- electricity transmission and distribution, the formulation of electricity retail tariffs based on cost of service and the development of cost reflective tariff design procedures for district heating (1999-2001).
- Task Leader, Tariff Structure Normalization, on the Kamchatka Energy Sector Development and Restructuring Program, Russia, conducted by Acres International, Canada and funded by the World Bank. Specific tasks on this energy sector planning project included cost of service analyses for heat and electricity supply, associated socio-economic issues and the development of a pricing strategy leading to cost reflective tariffs (2000).
 - Economic specialist in the evaluation of the Chalillo project, conducted by AGRA Monenco (Canada) for Belize Electricity. The project comprised the construction of a dam upstream of an existing hydro facility on the Macal River, primarily to boost its firm capacity and to better regulate water flows. The analysis entailed estimating the project's benefits based on avoided costs, derivation of optimum dam height and plant capacity, and estimation of net benefits to Belize Electricity (1997-2000).
 - Financial specialist in the analysis of the viability of the Kablangan hydro project, Philippines, conducted by AGRA Monenco (Canada) and funded by CIDA. Work included projection of the hydro company's financial statements and derivation of the required long-term sale price of the plant's output to achieve financial viability (1998-2000).
 - Financial specialist in the evaluation of the Cinera water supply/ hydroelectric project. Conducted by AGRA Monenco (Canada) for the city of Cucuta, Colombia. Home office work included financial analysis of several water supply and hydro generation alternatives at various dam heights and turbine capacities (1999).
 - Financial and tariffs analyst for the North Power Transmission Project, funded by the ADB, as part of an overall review conducted by Teshmont Consultants (Canada), of a \$500 million transmission line project undertaken by the North China Power Grid for possible ADB funding (1998-99).
 - Financial specialist in an assessment of the ability of Energy Authority of Mongolia to undertake the Zabkhan hydroelectric project. Work included the projection and analysis of the Authority's proforma financial statements, with and without the project. Undertaken by AGRA Monenco (Canada) for the Kuwait Fund (1998).
 - Expert witness, retained by James Maclaren Industries Inc., in its intervention in a public hearing convened by the Régie de l'énergie du Québec, Canada, to address electricity production supply tariffs (mainly hydro) proposed by Hydro Québec (1998).
 - Power tariffs and cost of service specialist on a tariff study conducted for Electricité d'Haiti (EDH) by AGRA Monenco (Canada). This World Bank financed project provided recommendations to both EDH and international lending agencies on desirable changes to EDH's out-of-date tariff structure (1997-99).
 - Financial specialist on a subtransmission/ distribution planning project in the Visayas and Mindinao areas of the Philippines, conducted by Dessau Inc. (Canada) and financed by the Canadian International Development Agency (CIDA). Work primarily included an assessment of the viability of required investments in subtransmission and distribution facilities within the region (1997).
 - Power tariffs consultant in Armenia, as part of a USAID financed project on power sector restructuring, conducted by Hagler Bailly Consulting (USA). The tariff work included a review and critique of the current power tariff situation, estimation of the long run marginal cost of supply and the formulation of a tariff strategy for the Armenian power sector (1996-97).

PROFESSIONAL HISTORY (continued):

- Project Manager for Monenco AGRA (Canada) on the valuation of a small hydro plant at Winneway, Quebec, Canada, for the Long Point First Nation. Managed the inputs of several engineers to derive the plant's value for possible acquisition (1995-97).
- Course designer and instructor for a series of courses in electric power pricing and costing, as well as in engineering economics for selected senior employees drawn from China's electric power bureaus. These courses, financed by CIDA through Monenco AGRA (Canada), were given in several locations in both Canada and China (1995-96).

1981 to 1996: Progressively senior positions from Analyst to Senior Supervising Consultant and Project Manager in undertaking a variety of consulting assignments in Canada and internationally. Worked on the following projects:

- Task Leader, Tariffs on a World Bank financed project for the reform of the power sector in the state of Orissa, India. The work involved the formulation and design of economically efficient electricity tariffs at the generation, transmission and retail levels. Specific responsibilities included cost of service analyses, tariff design and the co-ordination of inputs from several specialists into the overall tariff development process (1994-1996).
- Provision of technical assistance to the National Energy Policy Office of Thailand in determining a retail electricity tariff structure for the country. These tariffs were introduced countrywide in 1991. Also, developed time-of-day tariffs for large customers and wholesale tariffs for electricity sales between electric utilities (financed by CIDA, 1990-94).
- Economic and financial analysis for feasibility studies conducted for a Distribution Dispatching Centre (SCADA/ DMS) for the Provincial Electric Authority of Thailand (1993-94).
- Project manager for a load research study conducted for Maritime Electric Company, Limited, Prince Edward Island, and Canada. The project entailed the design of stratified random samples of the company's residential and commercial customers, the recording of their hourly load profiles over a period of a year, subsequent analyses of data collected and drawing conclusions about group behavioural characteristics about electricity consumption (1991-94).
- Staff consultant, specializing in electricity tariffs, to the ADB on a loan appraisal mission to Thailand (1993).
- A 10-month assignment in Madagascar, on a study financed by the World Bank, working with JIRAMA, the local electric utility. Participated in a review of the utility's existing tariff structure, the development of new retail tariffs and in forecasting JIRAMA revenue requirements (1988-89).
- Involved in the creation of a master plan for rural electrification in Haiti, financed by CIDA. Specifically, was responsible for the conception and design of the tariff structure required to finance the plan, as well as the accompanying financial projections. Also, worked on a detailed load forecast for the country broken down province by province (1986-89).
- Conducted assessments of the economic and financial viability of several capital-intensive projects including, among others, the feasibility of constructing a plant for the treatment of hazardous wastes in Quebec (1982-85), a paper recycling plant in Ivory Coast (1983-86) and hydro electric power developments in Guyana (1981-82).
- A variety of public utility regulatory and financial work in Canada including cost of service analyses, marginal cost pricing studies, corporate productivity studies, indexed fixed asset valuations, minimum system studies and preparation of evidence for submission at rate hearings. Clients

PROFESSIONAL HISTORY (continued):

included, among others, Maritime Electric, Newfoundland Light and Power, New Brunswick Power and TransAlta Utilities (1981-1994).

1979 to 1980: Planning Engineer (last position held), Denison Mines Limited, Elliot Lake, Ontario.

- Worked on long-range plans for the mine and feasibility studies of undeveloped properties; involved in the development of a long-range computer planning model; aided in the development of various engineering computer applications; also, involvement in time studies and determination of equipment requirements.

LANGUAGES: English (native fluency), French (very good)

CITIZENSHIP: Canadian

CLIENT LIST – since 1996:

Acres International, Niagara Falls, Canada
Acres Management Consulting, Toronto, Canada
Adam Smith International, London, UK
AMEC (formerly AGRA Monenco), Montreal, Toronto and Calgary, Canada
BDR North America, Toronto, Canada
Corporate Solutions Consulting Ltd, London, UK
CPCS Transcom International, Ottawa, Canada
CRISIL Risk & Infrastructure Solutions, Mumbai, India
Dessau Soprin, Montreal, Canada
DevTech Systems, Washington DC, USA
Econoler International, Quebec City, Canada
Engconsult, Toronto, Canada
Fichtner, Stuttgart, Germany
Hagler Bailly, Washington DC, USA
IMC Worldwide, Surrey, UK
International Development Group, Washington DC, USA
James Maclaren Industries, Masson, Quebec, Canada
Mendez, England & Associates, Washington DC, USA
MWH Global, Istanbul, Turkey
Ministry of Energy, Mozambique
Nexant, Washington DC, USA
OCA Global, Barcelona, Spain
Pragma Corporation, Washington DC, USA
SECOR Conseil, Montreal, Canada
SNC-Lavalin, Montreal, Canada
Social Impact, Washington DC, USA
Snowy Mountain Engineering Company, Melbourne, Australia
Sterling International Group, Washington DC, USA
Teshmont Consultants, Winnipeg, Canada
TransAlta Energy, Calgary, Canada
VisionRI, New Delhi, India

Funding agencies (usually indirect clients):

African Development Bank
Asian Development Bank (ADB)
Canadian International Development Agency (CIDA)
Department for International Development (DFID, UK)
European Bank for Reconstruction and Development (EBRD)
Kuwait Fund
Millennium Challenge Corporation (MCC)
United Nations Development Program (UNDP)
USAID
US Department of State, Bureau of Energy Resources
World Bank