

Arvid E. Kruze



International Development Consultant

- Power Sector Specialist
- Financial and Economic Analyses
- Hydro and other RE Projects
- Electricity Tariffs
- Team Leader and Project Management Experience

QUALIFICATIONS SUMMARY

Arvid Kruze is an electricity supply industry specialist, with expertise in economic, financial, policy and regulatory issues. Among other areas, this includes electricity tariffs and associated costing, financial/ economic analysis and corporate/ strategic planning. He combines advanced academic credentials with 30 years work experience, both domestically and internationally, particularly on development projects.

He has recently served as Team Leader on a number of technical assistance projects in Nigeria, Azerbaijan, Papua New Guinea, Afghanistan and India. He has also provided specialist input to a number of development projects throughout the world as an expert consultant. This has included a role as electricity tariffs/ financial/ economic specialist on projects in Botswana, Malawi, Seychelles, Saudi Arabia, Mozambique, Egypt, Kenya, Pakistan, India, China, Azerbaijan, Palestine, Haiti, Armenia, Russia, Thailand, Madagascar and Haiti. Work has also included financial and economic analyses in the assessment of hydropower and water supply projects in Canada, Sri Lanka, Mongolia, Colombia, Philippines, Belize, Burma and Peru, as well as other electricity infrastructure projects in China, Philippines and Canada.

EDUCATION

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

PROFESSIONAL HISTORY

1996 to date: Independent consultant to a number of electric utilities and consulting firms working in the electricity supply industry. Worked on the following projects, among others):

- Economic and financial specialist, as part of a project to promote the development of renewable energy technologies in Azerbaijan. Specific tasks include: i) international cost comparisons of renewable energy technologies, ii) making estimates of likely costs in Azerbaijan and iii) development of a methodology for assessing economic and financial viability of selected projects, which includes, among other sub-tasks, the derivation of feed-in tariffs. Contracted directly with UNDP (ongoing since September 2011).
- Team Leader, Economics and Finance, as a part of transaction advisory services provided by CPCS Transcom International for the privatization of successor companies created out of the Power Holding Company of Nigeria. The position entails leading 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. Supported by the World Bank (ongoing since January 2011).
- 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 (July to September 2010).

PROFESSIONAL HISTORY (continued):

- Senior advisor on an electricity tariff study undertaken for the Ministry of Energy, Botswana. The work comprised a number of 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 (June 2010 to June 2011).
- Individual consultant to the Asian Development Bank (ADB) for designing a rural electrification project in Papua New Guinea. Analyzed alternatives for grid extensions in given areas of the country, as well as off-grid possibilities in the form of solar-based lighting (March-April 2010).
- Economic and financial expert on the development of an Energy Policy for Seychelles. Worked on all economic and financial aspects of elements contained in the proposed policy. Engaged directly by UNDP (August 2009 to August 2010).
- Team Leader and Distribution Planning Expert on a project preparatory assistance study being conducted in Azerbaijan for the purpose of availing of a \$500 million credit facility available from the ADB. Responsible for preparing a power sector roadmap and leading a team of technical experts in project definition, cost estimation, economic/ financial analysis and due diligence on environmental and social aspects. Conducted through VisionRI, India (July 2009 to December 2010).
- Tariffs expert on a feasibility study to introduce interruptible tariffs to Saudi Arabia, under the country'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 (2008-10).
- Economic Specialist on a study to examine the feasibility of introducing Daylight Saving Time in Saudi Arabia, being conducted for the Ministry of Water and Electricity, Saudi Arabia, through Econoler International (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). Key activities on this project included, among others: i) a market forecast, ii) an assessment of power supply options, including hydropower and other renewable energy options such as solar and their optimization, iii) review of the policy, legal and regulatory environment, iv) preparation of four 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 a number of power mega-projects in the country, and to address a few associated issues (2008).
- Team Leader and Economist, on the Small to Medium Hydropower Development Project, Afghanistan, funded by the Asian Development Bank (ADB). The objective of this technical assistance project to the Government of Afghanistan was to ultimately deliver feasibility studies on 5 hydro projects in the 1 MW to 10 MW range, starting with a reconnaissance/ ranking study of 60 identified hydro sites. As Economist, conducted market forecasts in the areas served by the projects, estimated related benefits based on willingness-to-pay, and performed the required cost-benefit analyses. Conducted through Engconsult (2006 - 2007).

PROFESSIONAL HISTORY (continued):

- 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) in Russia, conducted through Fichtner. 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 (December 2005 - April 2007).
- Study on Interruptible Power Contracts, Egypt. Retained as an expert by Econoler International on a UNDP funded study to develop contractual arrangements between the country's power system operator and large customers for four different types of interruptible power (October - December 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 (July-December 2006).
- Tariffs expert on a project to establish and launch the Palestinian Energy Regulation Commission, carried out by Nexant 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 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. Provision of input, as required, to 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 (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. 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 (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, undertaken by Nexant (2003-04).
- Economist and financial specialist in the assessment of the Inginiyagala hydropower rehabilitation project in Sri Lanka, conducted by AMEC and funded by the Canadian International Development Agency (CIDA). 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 and financed by CIDA, the study analysed the economic and financial feasibility of a 500 kV line built for the purpose of evacuating 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 and funded by SEPC, included training and advisory services to SEPC planning staff (2000-2004).

PROFESSIONAL HISTORY (continued):

- Financial and tariffs specialist, Energy Infrastructure Services Project, Madhya Pradesh, India, funded by CIDA and conducted by SNC-Lavalin. Provision of assistance on financial, tariff and other regulatory matters to the Madhya Pradesh State Electricity Board (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 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. and funded by the World Bank (2001).
- Tariffs specialist on the Regional Energo Pilot Project in the Russian Republics of Komi and Samara, conducted by AMEC and financed by CIDA. Specific tasks included the development of tariffs for electricity transmission and distribution, the formulation of electricity retail tariffs based on cost of service and the development of 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 (in association with others) and funded by the World Bank. Specific tasks included cost of service analyses for heat and electricity supply, associated socio-economic issues and the development of a pricing strategy (2000).
- Economic specialist in the evaluation of the Chalillo project, conducted by AGRA Monenco 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 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 in order to achieve financial viability (1998-2000).
- Financial specialist in the evaluation of the Cinera water supply/ hydroelectric project. Conducted by AGRA Monenco for the city of Cucuta, Colombia. 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, 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 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 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 Inc. This World Bank financed project was an update of work performed ten years previously. The project provided recommendations to both EDH and international lending agencies on desirable changes to EDH's out-of-date tariff structure (1997-99).

PROFESSIONAL HISTORY (continued):

- Financial specialist on a subtransmission/ distribution planning project in the Visayas and Mindinao areas of the Philippines, conducted by Dessau Inc. 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. 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).
- Project Manager for Monenco AGRA on the valuation of a small hydro plant at Winneway, Quebec for an interested purchaser, using the discounted cash flow approach). Coordinated the inputs of a number of engineers to derive the plant's value (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, were given in a number of locations in both Canada and China (1995-96).

1994 to 1996: Project specialist for Monenco AGRA Inc., Montreal. Worked on the following project:

- 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 a number of specialists into the overall tariff development process.

1990 to 1994: Senior Supervising Consultant, Monenco AGRA Inc., Montreal. Worked on the following major projects, among others:

- 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, Canada. The project entailed recording the daily load profiles of a statistically valid sample of the utility's customers, subsequent analyses of data collected and drawing conclusions about group behavioural characteristics with regard to electricity consumption (1991-94).
- General assistance to Maritime Electric Company, Limited, on regulatory matters including, among other items, the development of a policy for the purchase of power from independent producers and provision of advice on matters relating to costing and tariff setting (1989-94).
- Staff consultant, specializing in electricity tariffs, to the ADB on a loan appraisal mission to Thailand (1993).
- Provision of assistance in electric tariff related matters to TransAlta Utilities, Alberta (1992).

PROFESSIONAL HISTORY (continued):

1981 to 1990: Supervising Analyst and Senior Analyst, Monenco Consultants Limited, Montreal. Was involved in the following work, among other projects:

- Staff position for a period of 5 months at Maritime Electric Company, Limited, PEI, providing advice and support to the Vice-President Rates and Energy Management in areas of tariffs and load forecasting (1989).
- 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 a number of 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, such as 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 included, among others, Maritime Electric, Newfoundland Light and Power, New Brunswick Power and TransAlta Utilities (1981-1990).

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
AMEC (formerly AGRA Monenco), Montreal, Toronto and Calgary, Canada
CPCS Transcom International, Ottawa, Canada
CRISIL Risk & Infrastructure Solutions, Mumbai, India
Dessau Soprin, Montreal, Canada
Econoler International, Quebec City, Canada
Engconsult, Toronto, Canada
Fichtner, Stuttgart, Germany
Hagler Bailly, Washington DC, USA
James Maclaren Industries, Masson, Quebec, Canada
Ministry of Energy, Mozambique
Nexant, 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):

Asian Development Bank (ADB)
Canadian International Development Agency (CIDA)
European Bank for Reconstruction and Development (EBRD)
Kuwait Fund
Millennium Challenge Corporation (MCC)
United Nations Development Program (UNDP)
USAID
World Bank