

## Pierre Langlois

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**Name of Firm:** Econoler **Years with the Firm:** 30  
**Profession:** Professional Engineer  
**Date of Birth:** February 21, 1963  
**Nationality:** Canadian

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### KEY QUALIFICATIONS:

Pierre Langlois boasts more than 30 years of experience in the clean energy sector, namely in the design, financing, implementation and monitoring of energy efficiency (EE) and renewable energy (RE) projects and programs, both in Canada and abroad.

Pierre is a first-rate international expert in the development and implementation of pioneering EE financial mechanisms, more specifically, in energy service company (ESCO) start-ups and operation in industrialized and developing countries. He has also acquired solid experience in all sectors of clean energy policy development, demand-side management and design of innovative initiatives for international financial institutions. Over the course of his career, he has acted as member of the board of directors of several ESCOs worldwide and a few international organizations such as the Efficiency Valuation Organization (EVO), for which he is still an international trainer in the measurement and verification of EE project performance. His achievements with Econoler have been awarded numerous prizes, such as the "Legend in Energy" honour given by the Association of Energy Engineers in 2007 and the Clean Technology Award 2000 by the Climate Technology Initiative and the Organisation for Economic Co-operation and Development (OECD) at The Hague Climate Change Convention (COP 6).

Thanks to his international experience, Pierre has worked in over 40 countries as part of assignments led or financed by major multilateral development banks such as the African Development Bank (AfDB), the Asian Development Bank (AsDB), the European Bank for Reconstruction and Development (EBRD), the International Finance Corporation (IFC), the Inter-American Development Bank (IDB) and the World Bank. He has also worked with bilateral and multilateral development organizations such as the Canadian International Development Agency (CIDA), KfW, GIZ, the International Energy Agency, the United States Agency for International Development (USAID), the Institut de l'énergie et de l'environnement de la Francophonie (IEPF) and many United Nations agencies.

He has led ventures for several major private sector clients, like Alcoa and ABB, as well as for major electricity companies, such as CEMIG (Brazil), DÉMÁSZ (Hungary), Energias de Portugal (EDP), Électricité de France (EDF), HEP (Croatia), Hydro-Québec (Canada), Société Nationale de l'Électricité et du Gaz (Sonelgaz) and Société tunisienne de l'électricité et du gaz (STEG).

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### EDUCATION:

1986 Bachelor of Science, Mechanical Engineering  
Laval University, Québec, Canada

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### LANGUAGES:

	<b>Spoken</b>	<b>Read</b>	<b>Written</b>
French	Excellent	Excellent	Excellent
English	Excellent	Excellent	Excellent

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**COUNTRIES OF WORK EXPERIENCE:**

Algeria, Anguilla, Antigua and Barbuda, Australia, Austria, Bahamas, Barbados, Belize, Benin, Bahrain, Bosnia-Herzegovina, Brazil, British Virgin Islands, Bulgaria, Cameroun, Canada, Chile, China, Colombia, Costa Rica, Côte d'Ivoire, Croatia, Czech Republic, Dominica, Egypt, El Salvador, France, Grenada, Greece, Honduras, Hungary, India, Ireland, Jamaica, Jordan, Kazakhstan, Kenya, Lesotho, Lebanon, Mexico, Moldova, Montserrat, Morocco, Palestine, Panama, Peru, Philippines, Poland, Portugal, Romania, Russia, Saint Lucia, Saudi Arabia, Senegal, Serbia, South Korea, Spain, St. Kitts and Nevis, St. Vincent and the Grenadines, Sweden, Switzerland, Tajikistan, Thailand, Trinidad and Tobago, Togo, Tunisia, Turkey, Ukraine, United Arab Emirates, United States of America, Uruguay, Vietnam and Yemen.

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**PROFESSIONAL MEMBERSHIPS:**

- Ordre des ingénieurs du Québec, Canada (Quebec's Association of professional engineers)
- Association of Energy Engineers
- Cogeneration Competitive Power Society
- Demand-Side Management Society
- American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) - Associated Member

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**COMPLEMENTARY BACKGROUND:**

2007	CMVP Certification (Certified Measurement and Verification Professional), Association of Energy Engineers (AEE) and Efficiency Valuation Organization (EVO)
2003	The CDM and JI Mechanisms, CDM and JI office, Ottawa
2002	Trainer for the RETScreen International Trainer Certification, Montreal

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**PROFESSIONAL EMPLOYMENT RECORD:**

Since 1998	<b>Econoler</b> President
1996-1998	<b>Soprin ADS</b> Vice-President, Energy group  <b>Econoler</b> Vice-President
1987-1996	<b>ADS Groupe-Conseil inc.</b> Director, Energy Efficiency Department (1992-1996) Energy Efficiency Engineer (1987-1992)  <b>Econoler Canada</b> Technical Director (1989-1996)

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**PROFESSIONAL ACTIVITIES:**

Since 2005	Board Member and Vice-Chair of the Efficiency Valuation Organization (EVO), a NGO that developed, among other protocols, the International Performance Measurement and Verification Protocol (IPMVP) [ <a href="http://www.ipmvp.org">www.ipmvp.org</a> ]
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**SUMMARY OF INTERNATIONAL EXPERIENCE:***Innovative Energy Efficiency Performance Contracting (ESCOs)***CDG Développement, Preliminary Study on the Creation of an Energy Service Company (ESCO), Morocco (2017)**

Senior Expert in Structuring Financial tool and Business Plan Development. Conducted a preliminary study on the creation of an energy service company (ESCO) so as to define its economic and financial scale and identify the conditions required for achieving its financial stability. It is expected that the ESCO will allow for developing and offering energy efficiency solutions for public building and public lighting operators, thereby helping achieve Morocco's national energy efficiency goals.

**World Bank, Support for the Development of an ESCO Market, Vietnam (2017)**

Technical Expert. This assignment consists of assessing the current status of ESCOs in Vietnam and identifying bottlenecks and barriers to ESCO development. The first phase will allow proposing policy recommendations and options to develop the ESCO market as discussed and investigated with main stakeholders in the country. The ensuing action plan will serve as the main Road Map to enable the Ministry of Industry and Trade to organize and develop the ESCO market. The assignment also includes an assessment of how carbon finance could drive the implementation of EE measures in industrial enterprises in partnership with the World Bank Carbon Partnership Facility.

**European Bank for Reconstruction and Development (EBRD), ESCO LED Street-lighting PPP Project in the City of Novi Sad, Serbia (2016-2017)**

Senior ESCO Expert. Econoler conducted a feasibility study to identify and define the scope of a bankable and commercially viable LED street-lighting project to be implemented by an Energy Service Company (ESCO) in the City of Novi Sad. She also supported the project's implementation by developing the public-private partnership (PPP) project contracts and all the related tender documentation needed by the city in the tendering and procurement phase.

**European Bank for Reconstruction and Development (EBRD), ESCO LED Street-lighting PPP Project in the City of Belgrade, Serbia (2016-2017)**

Senior ESCO Expert. Conducted a feasibility study to identify and define the scope of a bankable and commercially viable LED street-lighting project to be implemented by an ESCO in the City of Belgrade, and provided support for the project's implementation by developing the PPP project contracts and all the related tender documentation needed by the City in the tendering and procurement phase.

**Ministry of Energy and Natural Resources, Preparation of Guidelines for EPC Contracting for ESCOs and Case Study Development, Turkey (2015-2017)**

EPC and EE Building Expert. Econoler helped identify and promote alternative energy performance contracting (EPC) models better suited to the Turkish context. This was achieved by assessing the ESCO markets in the private sector, identifying the major barriers and recommending measures to address these barriers, including necessary key changes in Turkey's legislative framework. Adapted tools for facilitating the use of EPC in the country were also developed in the course of the assignment. In addition, an analysis of the energy efficiency market's potential was made to provide the government with additional information.

**European Bank for Reconstruction and Development (EBRD), ESCO/EPC Project Preparation and Public-sector Project Pipeline Development, Serbia (2014-2017)**

EPC Expert. Econoler assisted six municipalities and other public agencies (the clients) in developing and implementing 12 energy performance contracting (EPC) projects in three market segments (street lighting, public buildings and water and wastewater utilities). For each EPC project, Econoler experts were in charge of developing management tools, estimating energy savings, preparing the contract and tender documentation, and carrying out a financial analysis.

**Etiihad ESCO, Support for Super Energy Service Company (ESCO) Start-up, the United Arab Emirates (2013-2015)**

Project Director and EPC Expert. The assignment involved developing adapted energy performance contracting (EPC) contracts, preparing measurement and verification conceptual plans and adapted request-for-proposal procedures and supporting the launch of the first two processes for selecting energy service company (ESCO) sub-contractors. The support provided for the first two demonstration projects (buildings and street lighting systems) was focused on adapting the procurement documents, developing adapted baselines, evaluating technical and financial proposals, contributing to the ESCOs sub-contractor selection process and providing adhoc support for the first implementations.

**KfW Entwicklungsbank, Design of EPC Application for EE Buildings, Turkey (2014)**

Project Director. Econoler's assignment involved: (1) conducting a critical review of the energy performance guarantee concept developed by the General Directorate of Renewable Energy (GDRE) of the MoENR; (2) gathering information on the ESCOs that were operating in the market in Turkey; and (3) proposing options on how to integrate the EPC approach, and in particular the EPC concept of the GDRE into the design of a proposed KfW EE program involving public buildings.

**Emerging Energy & Environment, Municipal Efficient Lighting Project, Mexico (2013-2014)**

Project Manager and Senior EPC Expert. Econoler was mandated to perform a due diligence on a street-lighting EE project in Mexico. This assignment was intended to provide potential lenders in the financing deals with all the information required to enable them to decide whether to provide financing for this EE project. As part of the assignment, both technical and contractual reviews were conducted for the project.

**Manila Electric Co. (Meralco), ESCO Acquisition Due Diligence, Philippines (2013-2014)**

Team Leader. The purpose of the project was to advise Meralco, an electric utility in the Philippines, on the acquisition and operation of an energy service company (ESCO). The work involved assessing the company staff's capabilities through previous energy audits and project implementation they had carried out, and making recommendations on staffing needs, capabilities and training requirements to be met to ensure the successful operation of the EPC company to be acquired.

**The European Bank for Reconstruction and Development (EBRD), Development of Legal and Regulatory Framework Governing the Use of EPC in Public-sector Facility Projects, Serbia (2013-2014)**

Project Director. Econoler led the work carried out to design a necessary legal and regulatory framework in Serbia that governs the use of EPC in projects involving public facilities (buildings, water treatment plants, and street-lighting). The assignment involved making recommendations on how to adapt the current laws related to the use of EPC, prepare necessary documents (requests for proposals and contracts) and develop the adapted financial mechanisms (forfeiting) that enable launching specific projects into a second phase.

**GEM, ESCO Activity Development, the United States of America (2013-2014)**

EPC Expert. The assignment focused on providing strategic guidance to a mechanical and electrical contracting firm in the Midwest USA in its development of an EPC activity.

**Services Industriels de Genève (SIG), Energy Efficiency Financing and éco21 Program Assessment, Switzerland (2011-2014)**

Project Director and Principal Expert. Econoler was mandated to (1) evaluate the potential and methods for implementing a business approach using the Energy Performance Contracting (EPC) scheme; (2) analyze the éco21 program by setting forth recommendations to help improve its efficiency and reach its targets. The assignment also included support towards carrying out an investment grade audit for the first EPC project to be completed in a hospital.

**ABB Sweden, Development of Energy Service Company Activity, Sweden (2013)**

EPC Expert. Econoler organized and ran a workshop at ABB Sweden to present the various ESCO approaches and challenges, understand ABB Sweden's objectives in offering ESCO services to its clients, analyze its market and assess its capacity to offer such services. The workshop allowed managers from ABB Sweden to make a decision on the way forward.

**Sustainable Energy Authority of Ireland (SEAI), National Energy Performance Contracting Program for the Public Sector, Ireland (2012-2013)**

Econoler's mandate consisted in evaluating the approaches that could be used to launch a national public sector EPC program and participating in the design of model contracts and tendering documents. Capacity building for the various groups of stakeholders was also part of the assignment.

**KfW Bankengruppe, Support and Structure of a Nascent ESCO in Public Buildings and Infrastructure, India (2012-2013)**

EPC Expert. Econoler's assignment aimed at supporting an Energy Efficiency Services Limited (EESL) in structuring its strategy to develop its market as an ESCO. The development of an adapted business plan and capacity building of key EESL staff were also essential parts of the assignment.

**ABB, Design and Implementation Support for the Energy Performance Contract (EPC) Business Model, Worldwide (2010-2013)**

Team Leader. Econoler developed a general business model for the use of EPC in ABB's activities. The assignment involved carrying out the following tasks: (1) designing appropriate contracts and strategies for the implementation of EPC-based projects; (2) developing a suitable financial mechanism at the corporate level; (3) providing support to demonstration projects; (4) providing support for the preparation of proposals in response to calls for tenders; (5) developing adapted measurement and verification strategies of generated savings; (6) providing training, capacity building and support to various actors within ABB on EPC-related matters on a worldwide basis.

**United Nations Development Programme (UNDP), Technical Assistance for the Development of an Energy Performance Contracting Scheme, Kazakhstan (2012)**

Project Director in charge of analyzing the current conditions in Kazakhstan for ESCO and energy performance contracting (EPC) activities and identifying barriers. The assignment involved proposing recommendations for removing these barriers and the provision of favorable conditions for these activities as well as conducting a training for local specialists on energy service issues on the basis of ESCO and EPC. By the end of the training, the Kazakhstan companies owned the theoretical knowledge, technical capacity and practical skills required for the creation and further operation of ESCOs, the preparation of EPC and business-plans for financing.

**Services Industriels de Genève (SIG), Preliminary Market Study, Switzerland (2012)**

Project Director and Main EPC Expert mandated to conduct a market study on two areas of activity for the utility's commercial department: 1) generation of energy savings and 2) energy management and the use of energy performance contracting

**United Nations Development Programme (UNDP), Dubai Carbon Center of Excellence, Introduction workshop on Energy Performance Contracting (EPC) and ESCOs, UAE (2012)**

EPC Expert for the development and the delivery of a one-day workshop on Energy Performance Contracting in the United Arab Emirates (UAE).

**International Finance Corporation (IFC), World ESCO Market Analysis (2011)**

Team Leader and Main EPC Expert for building IFC's global strategic plan for the use of EPC in an effort to sustainably increase IFC's investment opportunities through ESCOs in emerging markets.

**International Finance Corporation (IFC), Contract Templates and Capacity Building Programs for Service and Technology Providers, Philippines (2010-2011)**

EPC Expert for the design of contract templates to facilitate common understanding of energy efficiency projects among financial institutions, service / technology providers and end-users. Common templates were presented and discussed during the five-day training with a review of related issues, such as project development, financial packaging, measurement and verification, and risk evaluation.

**KfW Bankengruppe, Energy Efficiency Program Through the Use of Energy Performance Contracting for the Public Building Sector, Jordan (2010)**

Project Director and main EPC Expert. Design of a dedicated national EE program for public building facilities using EPC as the core approach to be used for project implementation.

**United States Agency for International Development (USAID)/United Nations Development Programme (UNDP) – ESCO Operational Support – Ukraine (2008-2010)**

EPC Expert. The assignment aimed at supporting the development of a municipal ESCO operation in the city of Rivne. Econoler was requested to act as the strategic partner of ESCO Rivne to support the technical capacity of the ESCO and to help them expand their market throughout Ukraine.

**European Bank for Reconstruction and Development (EBRD), Improving Energy Efficiency in Buildings, Russia (2008-2009)**

Team Leader and Senior EPC Expert. Econoler was mandated to help identify the gaps in the institutional framework and potential solutions to help apply the EPC business model in Russia's municipal sector by studying a practical case involving a pilot project in the Surgut in Khanti-Mansi region in Siberia. The assignment involved: (1) reviewing the existing commercial, financial and legal frameworks (laws and regulations governing ESCO contracts, the forms of existing ESCO contract adopted, the project financing strategy, and the procedures adopted for tendering and selecting contractors); (2) reviewing the public procurement process and practices used; (3) reviewing the existing budget regulations of the municipalities and local self-governing bodies; (4) reviewing the capacity for offering ESCO-type services; (5) outlining appropriate methodologies and financing approaches that would work best in Russia, especially for the pilot project; and (6) proposing model contracts for ESCO business transactions that would enable the pilot project's procurement activities.

**Asian Development Bank (ADB), National Super ESCO Development, Philippines (2008-2009)**

Project Director and EPC Expert for the design of a suitable business model for a Super ESCO activity and the design of an adapted business plan for the proposed Super ESCO.

**Administración de Usinas y Trasmisiones Eléctricas (UTE), Business Plan Development for the Energy Efficiency Services Unit (USEE) of UTE, Uruguay (2007-2009)**

EPC Expert for the development of an ESCO activity for UTE, Uruguay's national electric utility. This assignment included the design, launch and operation of the USEE as an ESCO, training of the USEE team on energy auditing, marketing of ESCO projects, measurement and verification of energy savings, performance contracts, and all other EE and ESCO related topics, as well as the development of a business plan and a portfolio of EE projects.

**Solar Cells Hellas Group (SCHG), ESCO Development, Greece (2008)**

Project Director and main EPC Expert to provide technical assistance to a large firm specializing in renewable energy interested in starting-up energy services company (ESCO) operations in Greece. The focus was on training and providing technical support to the organization to build up this type of activities within the business.

**Union Fenosa, Assistance for ESCO Implementation, Spain (2007-2008)**

Project Director to provide technical assistance in building the national utility's internal capacity to develop and implement comprehensive EE projects under the energy performance contracting approach. Comprehensive training workshops were offered throughout the assignment, including EPC models, investment grade energy audit concepts, measurement and verification of project performance, EPC contractual approaches and project financing, and project marketing strategies.

**International Resources Group (IRG) / United States Agency for International Development (USAID), Capacity Building in Energy Efficiency, Ukraine (2007)**

Project Director and Trainer to provide capacity building for the development of EPC projects through meetings and workshops.

**Ministry of Energy and Mines, Support to the Development of Demonstration Projects by ESCOs, Peru (2006)**

EPC Expert to support local ESCOs in the preparation of bankable project proposals and to increase knowledge of the local financial institutions on the EPC concept. This project was financed by the Inter-American Development Bank.

**Institut de l'énergie et de l'environnement de la Francophonie (IEPF) / United Nations Environment Programme (UNEP), ESCO Market Development, West Africa (2005-2006)**

EPC Expert in institutional issues for the drafting of a medium-sized project document for the development of an ESCO market in the founding countries of the Organisation pour la mise en valeur du fleuve Sénégal (OMVS): Mali, Mauritania and Senegal. This project was partly financed by the GEF through UNDP.

**EDP Energia, Support for the Development of an ESCO Activity, Portugal (2004-2006)**

EPC Expert for the development of an ESCO activity for EDP Energia, a division of EDP - Energias de Portugal. This mandate included expanding the capacities of EDP Energia's team, developing a business plan and providing technical support for the development of the first energy efficiency project to be implemented.

**United Nations Office for Project Services (UNOPS), ESCO Development Project, Kenya (2004-2006)**

EPC Expert for the establishment of favourable conditions for the development of an ESCO operation in Kenya. The project aimed at developing an adapted business model and financial mechanisms for the Kenyan market and supporting the client in an ESCO start-up operation. This project was financed by the GEF through the UNDP.

**HEP ESCO, Energy Efficiency Project to Enhance the Development and Performance of HEP ESCO, Croatia (2004-2006)**

Project Director to support the implementation and the operations of the first ESCO in Croatia. This ESCO was launched by the Croatian Utility (HEP) and received a grant from the GEF and a loan from the World Bank to support its implementation. Over a 2-year period, the ESCO grew from a start-up to a firm of over 15 employees, which successfully implemented over 40 projects in the commercial, industrial and institutional sectors.

**Industry Canada – Sustainable Cities Initiative, ESCO Demonstration Project in Energy Efficiency, Romania (2005)**

Project Director for the design and implementation of a demonstration project in energy efficiency through a third-party financing approach (ESCO) for the city of Bucharest. The project focused mainly on the modernization of one part of the city hall's lighting system.

**World Bank, Technical Assistance for the Development of an ESCO Operation for UTE, Uruguay (2004-2005)**

Project Director for the design of a GEF proposal to set up an ESCO operation for Uruguay's national electric utility.

**Canadian International Development Agency (CIDA), Development of an ESCO, Romania (2004-2005)**

Project Director to help with the design of a business plan and provide start-up support for a Romanian ESCO operation partly owned by Econoler.

**Canadian International Development Agency (CIDA), Working with ESCOs in Bosnia, Croatia and Serbia (2004-2005)**

Project Director to carry out capacity building activities targeted at all strategic stakeholders for the creation of ESCOs in the three targeted countries. This project was financed by CIDA's Canadian Climate Change Program for Southern Europe.

**Sustainable Cities Foundation, Viability Study for the Implementation of an Energy Efficiency Project in the City of Katowice with an Energy Service Approach, Poland (2002-2005)**

Project Director for the technical and organizational development of an energy efficiency project in the public buildings of Katowice. The proposed financing mechanism for the implementation of this project was based on an EPC approach supported by a new financing mechanism developed by the EBRD.

**Institut de l'énergie et de l'environnement de la Francophonie (IEPF), Development of an ESCO Market, Côte d'Ivoire (2002-2005)**

Project Director for the creation of an EPC market in Côte d'Ivoire. This project included the training of all involved stakeholders, the support to the development of business plans for new ESCOs as well as technical assistance for their operations, the development of an adapted financing mechanism, the approval of the technical aspects of project financing, and measurement and verification of the implemented projects' results. This project was financed by the GEF through the World Bank.

**Canadian International Development Agency (CIDA), Development of an ESCO Project for Water Treatment Plants in the State of Rio de Janeiro, Brazil (2002-2005)**

Project Director for the development of an energy efficiency and energy recovery project of the waste water residues of different clean and waste water treatment plants in the State of Rio de Janeiro. The project was developed under an EPC approach for the benefit of CEDAE, the State's national water management organization responsible for water management.

**African Development Bank (ADB), ESCO Project Development and Implementation, Côte d'Ivoire (2002-2005)**

Project Director for the development and implementation of an energy efficiency project at the head office of the African Development Bank in Abidjan. This project was carried out under an energy performance contracting (EPC) approach, under which project development, implementation and monitoring were reimbursed based on the demonstrated results.

**World Bank, Technical Assistance to ESCOs, China (2004)**

Project Director supporting the operations of ESCOs (Energy Management Companies or EMC) in China, as well the operations of an ESCO association (EMCA).

**Natural Resources Canada (NRCan), Street Lighting Project, Tunisia (2002-2004)**

Project Director for an energy efficiency street lighting feasibility audit in Tunisia. The project was developed under an EPC approach together with Tunisia's the Agence Nationale des Énergies Renouvelables (ANER), and was used as a pilot project for the development of a structured national program.

**European Bank for Reconstruction and Development (EBRD), Development of an Innovative Public Sector ESCO Concept, Central and Eastern Europe (2002-2004)**

Project Director and EE Financing Expert for the design of an innovative approach to expand the use of the EPC concept in public sector facilities in Central and Eastern Europe. The assignment also involved supporting the development of two initial demonstration projects in Poland (Lodz and Katowice).

**Société Tunisienne de Gérance de l'Énergie (STGE), Start-up and Operation of an ESCO Operation, Tunisia (1999-2004)**

Project Director for the creation and development of the first Tunisian ESCO. The assignment included the development (technical, financial and legal) of more than 40 projects and the implementation of over 15 projects in the industrial, commercial and institutional sectors. The company's shareholders included public and private Tunisian banks, a local entrepreneur and Econoler.

**Department of Alternative Energy Development and Efficiency (DEDE), Assessment of Training Needs and Development of Capacity Building Programs for the Implementation of ESCOs, Thailand (2002-2003)**

Project Director for the design and delivery of capacity building activities aimed at increasing ESCO activities in Thailand. This project was financed by the GEF through the World Bank.



**Canadian International Development Agency (CIDA), SEETEC Project, Development of the Energy Efficiency Sector Policy, Bulgaria (2002-2003)**

Project Director for the development of the energy efficiency (EE) sector strategy within the scope of a more global regional electricity sector assistance program in the Balkans. The project focused on providing technical support to the development of a new EE policy and an institutional framework for the development of the EPC concept in the country.

**Canadian International Development Agency (CIDA), SEETEC Project, Development of the Energy Efficiency Sector Policy, Moldova (2002-2003)**

Project Director for the development of the energy efficiency (EE) sector strategy within the scope of a more global regional electricity sector assistance program in the Balkans. The project focused on providing technical support to the development of a new EE policy and an institutional framework for the development of the ESCO concept in the country.

**Institut de l'énergie et de l'environnement de la Francophonie (IEPF), Development of an ESCO Start-up and Support Project, Benin (2002-2003)**

Project Director for the development and support of a sustainable energy efficiency (EE) market in Benin. The project included the development of a program aimed at reducing energy consumption in all of the country's public buildings. The project also included the development of an EE revolving fund available to ESCOs to finance their projects. The project was financed by the GEF through UNDP.

**DÉMÁSZ / Électricité de France (EDF), Implementation of an ESCO Operation, Hungary (1999-2003)**

Project Director for the development of a business plan and a training program for the staff of the newly created ESCO. The project also included the support to the development and the implementation of five EE pilot projects. The project was implemented for DÉMÁSZ, an electricity distribution company located in the south of Hungary and an *Électricité de France* subsidiary. Technical assistance for the support of the ESCO operation was also part of the mandate between 2002 and 2003.

**Canadian International Development Agency (CIDA)/TEAM, ESCO Demonstration Project, Russia (2000-2002)**

Project Director for the development and operational support of four ESCOs in various Russian regions: Moscow, Korolev, Komi Republic, and Siberia. The Zapsibgasprom, RKK and SLTUS companies were among the Russian partners. The project also included the development and implementation of demonstration projects financed through a trust fund provided by CIDA.

**Fideicomiso para el Ahorro de Energía Eléctrica (FIDE), Support Program for the Creation of ESCOs, Mexico (2000-2002)**

Technical Director for the evaluation of market barriers related to ESCOs development in Mexico and for the design of programs to facilitate the development of such a concept. This project was financed by the Inter-American Development Bank.

**Canadian International Development Agency (CIDA), Technology Transfer for the Implementation of Projects with Performance Guarantee Contracts, Tunisia (2000-2001)**

EPC Expert for the development of the expertise in EPC of Maghreb Management Industries (MMI), a company specialized in the development of projects in Tunisia. This project was financed by the Private Sector Development Fund (PSDF) of the Canadian International Development Agency (CIDA).

**CEMIG, Development of a Business Plan for the Creation of an ESCO, Brazil (2000-2001)**

Project Director for the design of a comprehensive business plan for the start-up of a private ESCO, CEMIG—one of the most important electricity companies in Brazil—being the main shareholder. The startup that was created out of this initiative was *Efficiencia*, one of the most successful ESCOs in Brazil.

**United Nations Department of Economic and Social Affairs (UNDESA), Energy Efficiency Program for Arab Countries (1999-2000)**

EPC Expert for the creation of EPC concepts in six Arab countries: Saudi Arabia, Kingdom of Bahrain, Egypt, Lebanon, Tunisia and Yemen. This project was financed by the GEF through UNDP.

**Sonelgaz, ESCO Development, Algeria (1997-2000)**

Project Director to conduct a market study aimed at the implementation of an ESCO in Algeria in partnership with Sonelgaz (national power producer handling the transportation and distribution of electricity and gas in Algeria).

**Electrotek/USAID, Seminar on the Drafting of ESCO Type Contracts, Romania (1998-1999)**

Project Director for the preparation and presentation of seminars on the development of EPC contracts and their financing, in Romania. This project was financed by USAID and implemented by Electrotek, an American company.

**Solaronics, Development of ESCO Contracts, France (1998)**

Project Director and Technical Expert for the development of adapted EPC contracts related to the worldwide implementation of specialized drying equipment for paper mills. A demonstration project was implemented in a paper mill located in the North East of the United States.

**Institut de l'énergie et de l'environnement de la Francophonie (IEPF), Financing for the Development of ESCO Markets, West Africa (1996-1998)**

Project Director to provide technical assistance for the development and the operation of EPC-based projects in developing countries of West Africa and for the francophone member states.

**Institut de l'énergie et de l'environnement de la Francophonie (IEPF) / World Bank, ESCO Development, Côte d'Ivoire (1996-1998)**

Project Director and Senior EPC Expert for the design of an ESCO market enhancing program in French-speaking Sub-Saharan countries. The project included the development of a revolving fund to be used by ESCOs to finance their projects. The project was financed by the GEF through the World Bank.

**ADS International, Implementation of an ESCO, Morocco (1992-1998)**

EPC Expert for the support to the implementation of ADS Maroc, the first ESCO in Morocco. This project was financed by CIDA.

**Canadian International Development Agency (CIDA), Market Study and Business Plan for the Start-up of an ESCO Operation, El Salvador (1996-1997)**

Project Director to conduct a market study and a business plan for an ESCO operation start-up in El Salvador.

**Econoler South Korea, Technology Transfer for the Start-up and Operation of an ESCO, South Korea (1989)**

EPC Expert for capacity building related to technology transfer and the development of pilot projects for Econoler South Korea, an ESCO implemented by the Samsung Corporation, under an Econoler license agreement.

*Demand-Side Management***National Energy Efficiency Program (NEEP), Interruptible Rate Program, Saudi Arabia (2008)**

Technical Expert for the review of the existing rate structure offered in Saudi Arabia and the design of an interruptible rate structure that could help to reduce the peak demand growth in the country.

**Canadian International Development Agency (CIDA), Demand-Side Management Model for Guaranteed Carbon Emission Reduction, India (2002-2005)**

Project Director in charge of implementing a DSM project in India (State of Madhya Pradesh) aimed at developing carbon credits at an acceptable cost for Canada, while generating positive environmental and socioeconomic impacts for India. This project focused on the development of a sustainable financing scheme involving India's public limited government company IREDA and the set-up of an initial fund as well as a funding mechanism for two targeted sectors: agricultural pumping and street lighting. Two demonstration projects were implemented through the use of the EPC schemes.

**World Bank, Demand-Side Management Programs Strategic Study (2004)**

Technical Expert for a strategic study on best practices in demand-side management programs. The mandate mainly consisted to designing numerous case studies of programs that were not financed by the World Bank, and to assisting the technical team in the development of recommendations for the implementation of future projects in this sector by the World Bank. The project was financed by ESMAP.

*Energy Efficiency in the Water Sector***World Bank, Water Treatment Plant Energy Efficiency Technical Support program, Romania, Serbia and Ukraine (2013-2015)**

Deputy Team Leader. Assignment activities included the following: (1) design of a capacity-building program intended for over 40 utilities, in collaboration with national water treatment plant associations in the targeted countries; (2) technical assistance to the selected utilities in developing an energy-efficiency audit and an associated investment plan; (3) technical assistance in developing adapted financing for each project, based on the financing facilities available in the selected utilities' respective countries; and (4) overall support for project implementation. The project achieved satisfactory results: of the 36 participating utilities, 18 succeeded in completing an energy audit. Eight projects had investment committed, reaching a total of EUR 2,362,920.

*Energy Efficiency***Fundación Bariloche, Analysis of Innovative and Successful Business Models that Enable Cities in Latin America and the Caribbean to Adopt Efficient Street Light Technologies, Regional (2017-2018)**

Senior Expert in EE Business Models. Econoler is carrying out an analysis of different business models used in Latin American cities to implement energy efficient street lighting projects. Six case studies (Buenos Aires, Bucaramanga, Fortaleza, México, Santiago and Sonsonate) will be developed, along with a tool that will help municipalities carry out prefeasibility studies. Results will be disseminated through a Webinar.

**World Bank-IFC, Thermal and Electric Energy Efficiency in the Cement Sector in Brazil, Brazil (2016)**

EE-RE Financial Expert. The project involved carrying out two major tasks: (1) mapping out major commercially proven technologies available to improve thermal and electric EE in the cement sector based on international best practices. The EE technologies and measures considered included the improvements in kilns, waste heat recovery, high-efficiency clinker coolers, grinding systems, auxiliary equipment, electrical systems, automation systems, etc.; (2) providing a detailed description of some practically tested innovative business models to improve thermal and electric EE, including leasing, ESCOs and SPVs. The outputs of this assignment will be used as inputs for the drafting of the technical paper to be integrated into the "Technology Roadmap Low Carbon Technology for the Brazilian Cement Industry", which is jointly developed by the Brazilian Cement Industry Association (SNIC), IFC, IEA and WBCSD.

**Caribbean Electric Utility Services Corporation (CARILEC), Support for CARILEC's Climate Change Adaptation and Sustainable Energy Programming, the Caribbean (2016)**

ESCO and Demand-side Expert. Econoler was commissioned to support five electric utilities (in Barbados, Belize, Dominica, and Saint Kitts and Nevis) in developing (1) a climate-change adaptation strategy, (2) a supply-side management plan including strategies for both integrating renewable energy on the grid and the deployment of a smart grid system, and (3) a demand-side management plan targeting main consumers and those with the highest energy saving potential from the tourism, public, water utility, and street lighting sectors.

**Inter-American Development Bank (IADB), Development of an Energy Efficiency Project in the Water and Sanitation Sectors of Central America (Costa Rica, Honduras and Panama) (2009-2010)**

EE Financing Expert. Development of an EE project for three water supply and wastewater systems in Costa Rica, Panama and Honduras, including energy audits, improvement of maintenance plans and training.

**Inter-American Investment Corporation (IIC), Twenty-four energy efficiency audits, Belize & Jamaica (2009)**

Project Director for the performance of 24 walk-through audits (WTA). Each WTA was a quick assessment of a selected facility. Econoler identified the potential for energy savings and proceeded to a preliminary cost estimate of identified measures.

**Industry Canada, Energy Management Strategic Plan, Romania (2004-2005)**

Project Director for the development of a strategic energy management plan for the city of Bucharest. This plan was prepared for the benefit of the managers responsible for operating and maintaining the city's buildings and installations.

**Industry Canada, Evaluation of the Impact of a Specialized Energy Management Software Program, Poland (2004)**

Project Director to evaluate the results and the lessons learned from the implementation of an energy management software program in the city of Katowice.

**Natural Resources Canada (NRCan), District Cooling Project, Côte d'Ivoire (2002-2004)**

Project Director for the performance of a district cooling project feasibility study for the five most important buildings of Abidjan. The project was developed under an ESCO approach.

**Institut de l'énergie et de l'environnement de la Francophonie (IEPF), Development of an Energy Efficiency Project, Benin and Togo (2002-2003)**

Project Director for the design of a project brief to be presented to the GEF for the development of energy efficiency activities in Benin and Togo.

**Institut de l'énergie et de l'environnement de la Francophonie (IEPF), Public Sector Electricity Invoice Management, Benin (2002-2003)**

Project Director for the development, implementation and capacity building for a public sector electricity invoice management system.

**Industry Canada, Implementation of an Energy Invoice Management System, Poland (2002)**

Project Director for the implementation of an energy invoice management system in the city of Katowice.

**Canadian International Development Agency (CIDA), Energy Efficiency Project, China (1996-2002)**

Project Director for the implementation of an important pilot project in the residential sector of China to demonstrate the energy efficiency (EE) concepts used in Canada, including the measurement of individual consumption and the development and implementation of an EE building code.

**Société Tunisienne de l'Électricité et du Gaz (STEG), 120 MW Gas Turbine Energy Efficiency Project, Tunisia (2000)**

EE Financing Expert for the development of a business plan focusing on the implementation of a combustion intake air cooling system for two 120 MW gas turbines.

*Cogeneration***Canadian International Development Agency (CIDA), Development of Cogeneration Project under the ESCO Approach, Tunisia (2002-2004)**

EE Financing Expert for the development of a natural gas cogeneration project for two important Tunisian firms: the Société Tunisienne des Textiles (SITEX) and the *Société Tunisienne des Industries Pneumatiques* (STIP). The project activities included investment grade audits, as well as the designing of a financing and implementation plan.

**Canadian International Development Agency (CIDA), Biomass Cogeneration Project Using Rice Straw as Fuel, Vietnam (1996)**

Technical Expert for a feasibility and viability study of a cogeneration plant using rice straw residues as fuel.

*Renewable Energies***United Nations Development Programme (UNDP), Wind Energy Production Program Development, Tunisia (2006)**

Project Director for the development of a UNDP/GEF project to support the implementation of an important wind energy production program (300 MW) for Tunisia.

**World Bank, Chinese Study Tour on Green Energy Canadian Experience (2004)**

Project Director to lead a study tour across Canada for a Chinese delegation focusing on Canada's experience in green energy.

**United Nations Development Programme (UNDP), Development of a Project Brief for a Wind Energy Project, Tunisia (2003)**

Project Director for the design of an institutional capacity building program in the wind energy sector, developing a national wind card and writing a project brief to receive substantial financial support from the GEF.

**Institut de l'énergie et de l'environnement de la Francophonie (IEPF) / MRNQ/HQI, Development and Financing of Renewable Energy Projects, Africa (1999-2003)**

Project Director and Senior Expert for the development of renewable energy projects (wind, micro-hydraulic and biomass) in Africa for the IEPF and Quebec's Ministry of Natural Resources. The projects included the development of micro-hydraulic initiatives in French-speaking Sub-Saharan Africa, the energy recovery of the public landfills in Cameroon and Senegal, and the capacity building of French-speaking developing countries on the mobilization of international financing. The mandate also included the development of Project Briefs to present the different projects to the GEF to obtain financing from the UNDP.

**Canadian Cooperation Agency, Canadian Embassy, Côte d'Ivoire (2002)**

Project Director responsible for the development of a strategy note and an action plan on water and energy within the preparation of the *Poverty Reduction Strategy Paper* of Côte d'Ivoire.

*Measurement and Verification***Stimergy, Development and Implementation of an M&V Plan, France (2016)**

Project Director. Stimergy developed a domestic hot water (DHW) preheating system that used heat from computer servers. Econoler experts prepared a model measurement and verification (M&V) plan according to the IPMVP for a typical DHW-preheating system installed that used computer servers' heat.

**ABB, M&V for Beovista Technology, Australia (2015)**

Project Director. Econoler performed a due diligence review of energy savings associated with a kind of mains power distribution quality improvement equipment and developed a savings measurement and verification (M&V) strategy design for this equipment. The assignment involved: (1) reviewing the feasibility of reported savings associated with a pilot installation of the mains power distribution quality improvement equipment installed at the ABB Australia facility located at 601 Blackburn Road; (2) making a technology assessment of the mains power distribution quality improvement equipment; (3) evaluating the energy savings measurement and verification of the proposed mains power distribution quality improvement equipment; (4) recommending a measurement and verification strategy for the proposed mains power distribution quality equipment based on international best practices.

**C36, Supply of Assistance for an Energy Service Company Project (ESCO), France (2014-2015)**

Technical Expert. C36 is a newly established energy service company (ESCO). Econoler provided support to this ESCO for the development of its initial projects, particularly measurement and verification (M&V) projects. In this respect, Econoler first worked out an M&V model plan for lighting improvement projects and later provided a framework to develop an M&V plan in accordance with the International Performance Measurement and Verification Protocol (IPMVP). Once these tasks were completed, Econoler moved on to prepare a tailored M&V plan for a lighting improvement project in a plant which would integrate occupancy and natural lighting controls.

**St. John's University, Measurement and Verification Plan Review for a Performance-Based Facility Improvement Project, United States of America, New York State (2009-2011)**

Project Director for an assignment which consisted in providing St. John's University with recommendations and providing support for a Measurement and Verification (M&V) plan related to a performance-based facility improvement project carried out by an ESCO. A few months after the completion of this first assignment, Econoler was asked to undertake additional M&V activities. This new assignment aimed at adapting the M&V Plan and developing a tailored M&V report template, taking into account that the University decided to implement the energy conservation project on its own.

**Union Fenosa, Measurement and Verification Training, Spain/Canada (2008)**

Project Director for a three-month hands-on training of an M&V expert from Union Fenosa, Spain's third largest electricity and gas production and distribution company. The expert's training took place at Econoler's headquarters in Canada and mainly focused on different concepts related to performance contracting and energy services, and more specifically on energy efficiency projects' performance measurement and verification activities.

**Efficiency Valuation Organization (EVO), IPMVP Training, France (2007-2008)**

Expert in Performance Measurement and Verification for energy efficiency (EE) projects, in a mandate for training of French organizations gathering interested in EE. The group named the "Club" for EE services also has been supported in his activity aiming the promotion of the International Performance Measurement and Verification Protocol's adoption in France. A special 2-day training has been offered to 30 specialized experts from Schneider Electric.

**Agence de l'Efficacité Énergétique (AEE)/Institut de l'Énergie et de l'Environnement de la Francophonie (IEPF), (2007)**

Technical Expert for the translation and adaptation of the International Performance Measurement and Verification Protocol (IPMVP) for the Quebec and French-speaking Africa markets.

**World Bank, Efficiency Savings Measurement and Verification for the Replacement of Chillers in Hotels, Mexico (2001-2002)**

Project Director for the design and implementation of an energy efficiency Measurement and Verification plan for a chillers replacement program in ten Mexico hotels. This project was carried out through an initiative financed by the Montreal Protocol.

**HELIOS, Energy Invoicing Management Software (1994-1997)**

Technical Expert for the development of energy invoicing management software to be implemented in Canada and abroad.

**SYNERGIE, Energy Savings Management Software (1986-1996)**

Technical Expert for the development of energy efficiency software specialized in the measurement and verification of energy savings.

*Carbon Finance***Inter-American Development Bank (IDB), GEF Submission of a Climate Change Project using Chile's GEF-4 Allocation, Chile (2007)**

Financial Expert to support IDB, given Econoler involvement in Chile and its prior experience with GEF and in Climate Change (CC). IDB was contacted by the Country Program of Energy Efficiency (Programa Pais de Eficiencia Energetica -PPEE) of Chile to support the creation of the necessary documentation to be submitted to the GEF for a project to create a Technical Center to support Energy Efficiency development (CATEE) in Chile.

**World Bank, Greening the Hot Air, Bulgaria (2003-2004)**

Project Director to conduct a study to support the Government of Bulgaria in the development of an institutional and financial framework that would maximize the benefits related to the transaction of AAU in accordance with Article 17 of the Kyoto Protocol, while preserving the environmental integrity of the emission trading scheme.

**Canada's CDM&JI Office, Development of a Baseline for an Energy Efficiency Project in the City of Katowice, Poland (2003)**

Technical Expert for the development of a baseline for an energy efficiency project designed under an energy performance contracting (EPC) approach in order to make it eligible under the Kyoto Joint Implementation mechanism.

**Canada's CDM&JI Office, Market Study on the Development of Projects under a Joint Implementation Approach, Czech Republic (2003)**

Project Director for a market study on the opportunities of developing projects under a Joint Implementation approach. The information gathered through this study supported Canadian enterprises in promoting their climate change products and services in the Czech Republic.

**Canada's CDM&JI Office, Research Study for the Conversion of Joint Implementation Activities into JI Projects (2003)**

Project Director to conduct a research study on the possibility of converting joint implemented activities into projects allowing carbon credit transactions, within the scope of the Kyoto Protocol.

**Canada's CDM&JI Office, Development of a PDD for an Energy Efficiency Project for the National Sanitation Utility (ONAS), Tunisia (2002-2003)**

Project Director for the development of a PDD allowing an energy efficiency project of the national water utility of Tunisia (ONAS) to be eligible for carbon credit transactions through the Clean Development Mechanism of the Kyoto Protocol.

**Canada's CDM&JI Office, Development of a PDD for an Energy Efficiency Project Implemented Under an ESCO Approach at the Head Office of the African Development Bank in Abidjan, Côte d'Ivoire (2002-2003)**

Project Director for the development of a PDD allowing an energy efficiency project implemented at the head office of the African Development Bank (ADB) to be eligible for carbon credit transactions through the Clean Development Mechanism of the Kyoto Protocol.

*Financing Mechanisms***Agence Française de Développement (AFD), SUNREF Palestine, Market and Feasibility Study for an Energy Efficiency and Renewable Energy Finance Facility, Palestine (2017)**

Project Director. Econoler was hired by the AFD to carry out a two-phase project aimed at facilitating the launching of a specialized EE/RE credit facility in Palestine. Phase 1 involved conducting a comprehensive market assessment to evaluate the existing bankable market potential and identify the most promising economic sectors and types of EE/RE projects. Phase 2 involved conducting a feasibility study for the AFD's financing facility. Upon completion of Phase 2, Econoler finished designing the institutional and operational structures of the financing program and its technical assistance component.

**The World Bank, Morocco Public Lighting Transformation Program, Morocco (2016-2018)**

Project Director, The assignment's main objective is to assist the Government of Morocco in designing a sustainable Morocco Public Lighting Transformation Program using a public-private partnership (PPP) approach. As part of the assignment, Econoler is reviewing, analyzing and assessing the national public-lighting market size, its demand, the framework conditions for public lighting projects and their implementation models. In the course of this project, Econoler will be disseminating global, regional and national best practices and lessons learned by holding several workshops with the relevant stakeholders at various stages of the project to provide relevant knowledge and capacity-building. Upon completion of this assignment, Econoler is expected to have designed a project implementation model in support of the energy efficiency transformation of Morocco's public-lighting sector, based on Morocco's current context and international best practices.

**Raiffeisenbank (RB) EAD / KfW, Small and Medium Enterprises (SMEs) Finance Facility Energy Efficiency (SMEFF-EE) Window, Bulgaria (2014-2015)**

EE Financing Expert. The objectives of the assignment were to: (1) support SMEs in preparing and implementing their EE sub-projects; (2) assist the RB and, if necessary, the SMEs in preparing financing applications for their sub-projects, for which the SMEs intended to take a loan; and (3) help implement those sub-projects subsequently financed by a KfW credit line. More specifically, Econoler carried out the following main activities: (1) preparing EE sub-projects; (2) conducting feasibility studies and/or energy audits and verifying EE sub-projects; (3) supporting the RB in identifying potential clients interested in investing in EE measures; and (4) developing an Operations Manual (including a list of eligible measures and equipment [LEME]) and software tools for sub-project assessment.

**Inter-American Development Bank (IDB) – Multilateral Investment Fund (MIF), Designing and Structuring of an Energy Efficiency Facility, Colombia (2014)**

EE Financing Expert. Econoler was mandated to provide the IDB/MIF with technical and legal backstopping and strategic advice on the designing and structuring of an EE facility, including support for developing: (1) the most appropriate legal structure design for this energy efficiency facility; (2) the financial products that this facility should provide; (3) a financial model of investment for the facility; (4) a methodology for estimating GHG emission reductions; (5) the lending manual, guidelines and eligibility criteria; and (6) the requirements to follow when monitoring energy savings and GHG reductions.

**International Finance Corporation (IFC), Sustainable Energy Finance (SEF) Program Market Assessment, Barbados, Belize, Grenada, Jamaica, Saint Lucia (2013-2014)**

Project Director. Econoler was mandated to assess market opportunities for SEF in the Caribbean region and to support the structuring of the components and activities of the SEF Caribbean Program. This assessment consisted of the following activities: (1) establishment of the conceptual framework; (2) identification and analysis of market segments to be prioritized; (3) identification of major market barriers and recommendations for their mitigation; (4) assessment of the readiness of the financial sector. At the completion of this project, Econoler proposed a methodology to IFC on how to maximize the energy and water efficiency financing potential.

**Inter-American Development Bank (IDB), Preparation of a Policy Note on the Financial Instruments for Energy Efficiency and Renewable Energy, Bahamas and Barbados (2013)**

Project Director. The project included an analysis of each country's energy market, the calculation of energy savings and renewable energy production potential by sector and recommendations on financial instruments adapted to each market.

**Inter-American Development Bank (IDB), Technical Support Consultant on Financial Instruments for Energy Efficiency, Latin America (2012-2013)**

Project Director for the development of energy efficiency financing products to support the IDB team in reviewing existing instruments and experience and to prepare reports and technical notes to be presented to various stakeholders in Latin America and the Caribbean (LAC).



**KfW Bankengruppe / China EximBank, Energy Efficiency and Renewable Energy Credit Program, China (2009-2012)**

Strategic Advisor for providing technical assistance to the China EximBank (Program Executing Agency) and potential clients in the implementation of a credit line and the introduction of a new credit product for financing energy efficiency and renewable energy projects.

**Kreditanstalt Für Wiederaufbau (KfW), Study on the Development of a Credit Line to Promote the National Energy Efficiency Market, Brazil (2011)**

Project Director. Econoler conducted a comprehensive study of the national energy framework with the aim to identify opportunities for energy efficiency financing and to define a tailored credit line for target stakeholders involved in this market sector.

**International Energy Agency, Handbook Preparation (2011)**

Project Director. Econoler was mandated to design and develop a handbook aimed at helping policy makers understand and implement energy efficiency financing. Main areas of focus included preferential rate loans, risk-sharing facilities and third-party ("ESCO") financing.

**European Investment Bank (EIB), Guidance for Procuring Public-Private Partnerships (PPPs) in Energy Efficiency in Public Buildings (2011)**

Project Director. The assignment consisted to developing a guidance document to assist PPPs task force in promoting the concept of energy performance contracting (EPC), in addition to supporting project promoters and procuring authorities for the development and implementation of PPPs in energy efficiency in public buildings.

**Fundación Chile, Business Model for Private Investment Fund for Energy Efficiency and Renewable Energy, Chile (2010-2011)**

EE financing Expert for structuring a business model and proposing a structure for a new private energy efficiency and renewable energy (EE/RE) financing fund (Chilean Ecoefficiency Fund – CEF). Tailoring the CEF to the Chilean market, developing financing strategy and range of financial products, and designing a "road map" for Fundacion Chile as a step-by-step guide for the establishment of CEF.

**Kreditanstalt für Wiederaufbau (KfW), Strategic Concept Development Energy Efficiency Program, Institutional (2010)**

Project Director for the design of potential concepts to enable KfW to identify opportunities in order to support the development of the energy efficiency market in Egypt, Jordan, Morocco and Tunisia. The assignment included the delivery of a workshop with KfW experts to present the opportunities and exchange the best concepts to be retained by KfW.

**Inter-American Development Bank (IDB), Advisory Services on Public-Private Partnerships for Energy Efficiency in Public Buildings, Institutions (2010)**

Project Manager and Senior Technical Expert. Econoler was asked to provide a written opinion on the potential of the program to achieve the objectives set out by Clean Technology Fund (CTF), for the purpose of the request validation from CTF.

**International Finance Corporation (IFC), Energy efficiency and renewable energy market potential and characterization study, Brazil (2010)**

EE Financing Expert. This assignment consisted in carrying out a comprehensive market assessment to promote energy efficiency and renewable energy (EE/RE) investments in Brazil through local financial institutions. The goal of the final report was to provide market data to local financial institutions, provide business planning support, and possibly increase their interest and participation in the EE/RE industry.

**United Nations Development Programme (UNDP) Inter-American Development Bank (IDB), Energy Efficiency Program Design, Brazil (2008-2010)**

Project Director for this assignment which consisted to conducting a due diligence on the design of various partial guarantee mechanisms for energy efficiency financing in Brazil in order to ensure conformity with current market conditions and to improve the design, as necessary, before submission for financial approval.

**KfW Development Bank, Programme Design for Energy Efficiency Financing in Public and Commercial Buildings and Infrastructure, India (2009)**

EE Financing Expert for a study which reviewed existing programmes and policies relative to the Energy Efficiency (EE) market in public and commercial buildings as well as infrastructure. The study reviewed the existing framework, took into account relevant players, identified impediments and the potential for energy savings and thereby proposed preliminary programme approaches to EE financing in the targeted sectors.

**Fundación Chile, Instruments and Sectoral Models Design for Clean Energy and Energy Efficiency, Chile (2007)**

EPC Expert for the design of business models (including technical, financial, economical, legal and fiscal aspects) proposals that would facilitate the growth of the ESCO market in Chile and contribute to the growth of energy efficiency (EE) and non-conventional renewable energy projects supply and demand. Econoler conducted a full assessment of the EE market, including banks, existing institutional programs and project developers as well as equipment suppliers and end-users in order to design an EE financing program. This project was co-funded by the Inter-American Development Bank.

**Petrobras-Br, Development of an Energy Efficiency Program for the Brazilian Market, Brazil (2006-2007)**

EE Financing Expert. This assignment consisted in helping with the design of an energy efficiency (EE) program in the Brazilian market, which included a market study, the definition of the project acceptance criteria and the development of adapted and innovative energy performance contracting (EPC) financial mechanisms. The assignment also included the development of a business plan. The objective was to increase the number of EE projects implemented in Brazil. This project was financed by the Renewable Energy and Energy Efficiency Partnership (REEEP).

**United Nations Development Programme (UNDP), Development of Energy Efficiency Programs in Buildings, Brazil (2006-2007)**

Project Director for the design of a USD 100 million building energy efficiency (EE) program in Brazil. The mandate included the design of several subprograms related to capacity building, demonstration projects and an innovative EE performance guarantee mechanism as well as a complete set of documents (GEF Project Brief and UNDP Project Document) for the approval of the project by the GEF.

**United Nations Environment Programme (UNEP) Risoe Center, Development of Energy Efficiency Financing Mechanisms, Brazil, China, and India (2005-2006)**

Project Director for various energy efficiency financing workshops targeting the three main developing countries in the world. This mandate was carried out within the context of a larger project financed by UNF and implemented by the UNEP Risoe Center and the World Bank.

**National Agency for Energy Conservation (ANME), Financing Institutions Training on Energy Efficiency and the ESCO Concept, Tunisia (2005-2006)**

Project Director for the development and delivery of specialized training sessions on energy efficiency (EE) in the industrial sector to Tunisian financial institutions and insurance experts. The purpose of this training was to allow the participants to better understand EE projects and their role in the implementation of a new industrial EE program in Tunisia.

**European Bank for Reconstruction and Development (EBRD), Development of a Credit Line for Energy Efficiency and Renewable Energy Projects, Romania (2005)**

Project Director for the development of a EUR 50 million dedicated credit line for the implementation of energy efficiency and renewable energy (EE/RE) projects. The assignment focused on conducting a market study to evaluate the potential for such a credit line, the development of the concept for its implementation and the research on how to use carbon financing to benefit the facility.

**United Nations Environment Programme (UNDP)/ Global Environment Facility (GEF), Development of a Financing Mechanism, Morocco (2005)**

EE Financing Expert for the development of an innovative energy efficiency (EE) financing mechanism in Morocco. The project's objective was to encourage the leverage of capital for investments in EE initiatives for the facilities of the targeted ministries—The National Energy Board (NEB) and the urban administrations distributing electricity.

**United Nations Department of Economic and Social Affairs (UNDESA), Development of a Sustainable Partial Loan Guarantee Scheme for Energy Efficiency Projects Financing, Egypt (2002-2003)**

Project Director for the design of a partial loan guarantee fund to support energy efficiency projects financing in Egypt. The program was financed by the GEF through UNDP.

**World Bank, Design of an Energy Efficiency Financing Program, Tunisia (2002-2003)**

Technical Expert for the development of an energy efficiency financing program for projects in the Tunisian industrial sector. Part of this mandate focused on the development of a full project concept and in the preparation of all related documents for its approval by the World Bank and the GEF.

**United Nations Department of Economic and Social Affairs (UNDESA), Program Design for Coal Boiler Efficiency Improvement, China (2001-2002)**

Project Director for the design of an adapted program to improve the efficiency of small coal boilers in China. The design included the development of adapted financing mechanisms. The project was financed by UNF.

*Energy Fund Design and Management***Bulgarian Energy Efficiency Fund (BEEF), Management of the Energy Efficiency Fund, Bulgaria (2005-ongoing)**

Project Director for the management of a specialized USD 13 million energy efficiency fund. The facility was funded by the World Bank through a GEF grant and from a co-financing grant from the Austrian and Bulgarian governments. Over 200 projects were financed over more than 9 years for a total value exceeding USD 60 million.

**The Organization of American States (OAS)/Global Environment Facility (GEF), Capacity Building Support for SIRC Fund, Antigua and Barbuda (2015)**

EE/RE Technical Expert. Econoler was commissioned to support the development of the SIRC Fund by assessing the SIRC staff's internal capacity, designing a training package to facilitate the project negotiation process and developing a manual with guidelines on how to conduct due diligence on proposed investments, risk assessment, monitoring and evaluation (M&E) of RE operations and cash flow monitoring and accounting.

**TPF Group, Technical Assistance for the Operation on Energy Efficiency Fund, Romania (2003-2004)**

Project Director to the management of a specialized Romanian Energy Efficiency Fund (FREE). The project activities included the development of marketing strategies and the review of potential projects that could be financed by the Fund. FREE was created by the World Bank and financed by the GEF to support the development of Energy Efficiency projects in Romania.

*Program Monitoring and Evaluation***Services Industriels de Genève (SIG), Sustainability, Energy Efficiency Approach, Switzerland (2012)**

Technical Expert to conduct a number of studies on financing sources and mechanisms, proposing an array of energy efficiency (EE) macro measures in Geneva and putting the selected measures into operation. At each stage of the mandate, contextualization and discussion with market players in Geneva served to increase the level of detail, helping to define a roadmap for EE measures and financing packages for the different programs.

**Asian Development Bank (ADB), Energy Sector Strategy and Evaluation Study, Asia (2006-2007)**

Team Leader in charge of formulating an intervention strategy for the Asian Development Bank aimed at developing the energy sector in its Asian eligible member countries. The assignment also involved drawing up a series of 12 technical reports on the energy sector perspectives in the member countries of the ADB, promoting energy efficiency (EE) and renewable energy (RE), developing energy infrastructures, energy for everyone, energy financing, the development of technologies, capacity building and information dissemination. The assignment also consisted in the evaluation of EE components in the various energy projects financed by the ADB in China and India over the last five years, through the review of a sample of projects implemented by the Bank in these countries. On this basis, recommendations were made to improve the EE components in the revised 2007 ADB energy strategy.

**Canadian International Development Agency (CIDA), Monitoring and Evaluation of Projects, China (1996-1998)**

Project Director for the Monitoring and Evaluation of three important projects in the energy sector, financed by CIDA.

*Programs Design***KfW Bankengruppe, Feasibility Study on a Public Buildings Energy Efficiency Programme, Morocco (2018-2019)**

Project Lead and Senior Technical Expert. The mandate consists of conducting a study on the design and structure of a programme aimed at improving energy efficiency in Moroccan public-sector buildings.

This study will serve to perform a detailed assessment of the energy savings potential and required investments in public buildings, a detailed review of the regulatory, institutional and financial frameworks, as well as to propose the most appropriate institutional and financial structure and a comprehensive action plan to leverage the energy efficiency potential in the public sector.

**Cowater International Inc., Sustainable Economic Development through Renewable Energy and Energy Efficiency, Jordan (2018)**

Project Team Leader. Conducted program design for an initiative aimed at introducing renewable energy and energy efficiency solutions at the household level. The project was focused on (1) improving the necessary skills and employment prospects, particularly for women and youth, in Jordan's demand-side-management clean-energy sector and (2) strengthening the enabling environment for speeding up this sector's growth.

**The World Bank, Energy Sector Reform Planning, Jamaica (2014)**

Senior EE Specialist. Econoler was mandated to: (1) assess the market opportunities for energy efficiency (EE) in Jamaica's public sector; (2) identify areas of opportunity to enhance EE in the public institutions (health, education) and public utilities (water and wastewater sectors, street lighting, etc.); and (3) quantify their energy-saving potential. The assignment included the support to a World Bank team of experts to identify global reforms in the Jamaican regulatory framework that could increase the global effectiveness of the sector and reduce the global energy cost at the public sector end user's level.

**Multilateral Investment Fund (MIF), Member of the Inter-American Development Bank (IDB) Group, Assessment of Options for Structuring and Financing LED Street Lighting Project, Jamaica (2014-2015)**

Team Leader. Econoler was contracted to assist with identifying appropriate commercial structures for implementing and financing an LED street light replacement program in Jamaica. More specifically, Econoler: (1) identified all relevant commercial options for implementing the project and analyzed the cost to be involved in relation to the various commercial structures; (2) assessed each option by looking at its capital costs, diverse funding sources (including both commercial and development banks), value for money over a 10-year assessment period and the fiscal impact; (3) proposed uses of the best option to achieve cost savings in the short, medium and long-term in relation to project cost reimbursement.

**Inter-American Development Bank, Design of a Direct Install Program for Private Sector End Users, Jamaica (2014-2015)**

Project Director. Econoler was mandated to design an adapted approach to use the direct Install concept for EE projects in the context of Caribbean countries. A major part of the assignment was to adapt the developed concept to the Jamaican context based on JPSCO's specific situation and the existing regulatory framework, as well as propose adaptations of such framework that would enable the possible implementation of such scheme.

**United Nations Economic Commission for Europe (UNECE), Background Paper on Global Strategy for Energy Efficiency Market Formation to Mitigate Climate Change, UN Regions (2011)**

Project Director for the analysis of the energy efficiency (EE) market growth in the UN Regions (Europe, Asia Pacific, Africa, Middle East and Latin American and the Caribbean), and for the production of a background paper on the Global Strategy for EE Market Formation.

**Kreditanstalt für Wiederaufbau (KfW), Energy Efficiency Sector Review, Thailand (2010-2011)**

Project Director. KfW mandated Econoler to carry out a pre-feasibility study and analyze various approaches that could address barriers to the development of the energy efficiency market in residential and/or non-residential buildings in Thailand. The output consisted in the design and proposal of four financing programs for the public and private sectors.

**Kreditanstalt für Wiederaufbau (KfW), Energy Efficiency Sector Review, Philippines (2010-2011)**

Project Director. KfW mandated Econoler to carry out a pre-feasibility study and analyze various approaches that could address barriers to the development of the energy efficiency market in residential and/or non-residential buildings in the Philippines. The output consisted in the design and proposal of five financing programs for the public and private sectors.

**Asian Development Bank (ADB), Recommendations and Options for Energy Efficiency Programs, Tajikistan (2010)**

Project Director. Identifying of options for energy efficiency (EE) improvements in Tajikistan and making recommendations for EE programs in residential and commercial subsectors.

**Water and Sewerage Authority (WASA), National Initiative for the Development and Implementation of an Energy Efficiency Program in the Water Sector, Lesotho (2009)**

Technical Director for the development of a national initiative aimed at reducing energy consumption in Lesotho's water utilities. This initiative involved better management of water treatment plant equipment and the implementation of an awareness program on water wastage.

*Energy Efficiency Policies***World Bank, Supporting Energy Efficiency Development in the OECS Countries: Anguilla, Antigua and Barbuda, Dominica, Grenada, Montserrat, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, and the British Virgin Islands (2013)**

Senior Expert. Preparation of a paper on the potential regulatory changes and commercial structures that would incentivize the different OECS countries (with particular focus on Grenada and St. Lucia) to develop and implement EE initiatives using the electricity utilities as the main drivers for implementation, while taking into account the recent creation of the Eastern Caribbean Energy Regulatory Authority (ECERA).

**Organisation of Eastern Caribbean State (OECS), Development of Sub-Regional and National energy efficiency strategies and action plans, Anguilla, Antigua and Barbuda, Dominica, Grenada, Montserrat, St. Kitts and Nevis, St. Lucia, St. Vincent and Grenadines, Virgin Islands (British), (2012-2013)**

Project Director for the development of subregional and national strategies and action plans to provide a strategic framework for improving the efficiency and effectiveness of the energy sector of OECS countries. The assignment also provided a sustainable approach for both managing the constant growth of energy demand and alleviating the risk of energy shortages.

**African Development Bank (AfDB), Support for the Implementation of a National Energy Efficiency Policy, Egypt (2011)**

Technical Expert for this technical assistance in the review and improvement of energy efficiency and renewable energy (EE/RE) policies, with the aim of allowing the AfDB to go forward with its policy-based lending operation targeting the promotion of EE/RE at national level.

**The World Bank, Energy Efficiency Market Study, Egypt (2010)**

Project Director mandated to review the energy efficiency (EE) market in Egypt in order to recommend strategic actions to be undertaken by the Government of Egypt to promote and sustain EE improvements.

**Asian Development Bank (ADB), Energy Sector Strategy and Development (2006-2007)**

Project Director supporting the ADB in the development of its new energy strategy. The mandate included meetings with the main energy sector stakeholders of the Bank, research on different aspects of the energy strategy components and assistance in presenting the strategy to ADB's member countries. The consultant had prepared a draft energy sector strategy 2006 paper to be approved by the ADB Board of Directors, and had undertaken a review and analysis of significant areas such as energy outlook and data book 2006 in the Asia and Pacific region, energy efficiency and renewable energy, energy sector reforms in Asia and energy security and access.

*Strategic Planning***United Nations Environment Programme (UNEP), Assistance in Designing a Strategic Programmatic Approach to Developing Energy Efficiency in the Buildings Sector, Worldwide (2013-2014)**

Senior EE Expert mandated to provide assistance in designing a new strategic programmatic approach to be used by UNEP as the fundamental approach to its involvement in improving energy efficiency in the buildings sector.

*Energy Audits***The World Bank, Evaluation and Identification of a Pipeline of Cities for Structuring PPPs for Public Street-lighting in Brazil, Brazil (2017-2018)**

Senior Technical and PPP Expert. Econoler is providing support to the World Bank and the Caixa Econômica Federal in evaluating and identifying about 10 cities in Brazil interested in developing public-private partnerships (PPPs) to modernize their street-lighting systems, including conducting pre-feasibility studies, preparing a toolkit for future pre-feasibility studies and providing the selected cities with support in drafting legal regulations governing PPPs for street-lighting.

*Training***Ministry of Industry and Trade, Development and Delivery of a Training Program for ESCOs/EESPs, Vietnam (2015-2016)**

Trainer. The Ministry intends to significantly enhance the level of knowledge among ESCOs in Vietnam by providing them with a 15-day comprehensive training and certification program covering all aspects of an ESCO's operations. IJET is developing this program by leveraging the materials and experience it developed as a result of its work on the Certified Professional in Energy Performance Contracting (CPE) program it offered in Thailand in 2014. Training will also be offered to government officials and financial institution officials. In addition, training of trainers will be conducted to ensure that training can be offered in the Vietnamese language in the future by qualified local experts.

**Participants, One-day EVO Training, Austria (2011)**

Training Expert. Conducting a training workshop introducing the EVO's system of measurement and verification (M&V) in Vienna, Austria.

**SEAI, M&V Training, Ireland (2011)**

Training Expert. Carried out the preparation and delivery of a one-day training on the measurement and verification of energy savings and exam proctor, in Dublin, Ireland.

**Training session: Certified Measurement and Verification Professional (CMVP), Spain (2010) and France (2009)**

Training Expert. Preparation and presentation of a three-day training session designed to certify participants as Certified Measurement and Verification Professionals (CMVPs) in energy performance, a title conferred by the Association of Energy Engineers (AEE). This also includes monitoring an exam at the end of the training session. Participants in the CMVP session learn how to design a measurement and verification (M&V) strategy for their own or for their clients' projects in compliance with the International Performance Measurement and Verification Protocol (IPMVP), and later to manage the savings verification process for the development of internal and external reports.

**Inter-American Investment Corporation (IIC), Energy Efficiency Workshops, Bahamas, and Trinidad & Tobago (2009)**

Project Director and Trainer. Development and delivery of two one-day training workshops on energy efficiency and tools for the development of projects.

**POE ESCO Sp. z o. o., Study tour, Québec/Poland (2008-2009)**

Project Director for a three-day study tour that was held at Econoler's headquarters in Quebec City for the employees of a Polish ESCO. The study tour included training activities on various ESCO-related topics, such as marketing aspects of ESCO projects, customer relations, financial matters, accounting for ESCOs, as well as visits to a national energy efficiency agency and to one local ESCO.

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**SUMMARY OF EXPERIENCE IN CANADA:***Innovative Energy Efficiency Performance Contracting (ESCOs)***Natural Resources Canada (NRCan), Facilitation and Support Services for an RCMP Project within the Federal Buildings Initiative of NRCan's Office of Energy Efficiency, Canada (2013-2017)**

Technical Advisor. Support the Royal Canadian Mounted Police (RCMP) as part of the Federal Buildings Initiative and provide assistance for an energy efficiency project in the form of an energy performance contract (EPC).

**Centre hospitalier universitaire de Québec (CHUQ), Energy Efficiency Project Implementation Support Under an EPC, Canada (2008-2016)**

Project Director. Support in the implementation of an energy efficiency project under an energy performance contract (EPC) for the three main buildings of the largest hospital centre in the Quebec region. The mandate included the preparation of call for tender and application documents to select an energy service company (ESCO), supervision of construction works, and third-party verification of the claimed energy savings generated.

**Alcoa, Energy Performance Contracting (EPC) Development, Canada (2014-2015)**

Team Leader and EPC Expert. Econoler was mandated to offer technical assistance to Alcoa for the design and launch of an initiative to implement EE projects in all its facilities worldwide through the use of the EPC concept. The concept structure included an off-balance sheet approach through a shared savings agreement with different ESCOs selected with Econoler's support.

**Centre de santé et de services sociaux (CSSS) Alphonse-Desjardins, Coaching for a Call for Tenders for an Energy Efficiency Project, Canada (2012-2015)**

Project Director and EPC Expert. The CSSS Alphonse-Desjardins wanted to issue a public call for tenders to select an energy service company (ESCO). Econoler's mandate was to coach the CSSS Alphonse-Desjardins through the ESCO selection process, i.e. the call for tenders and the request for proposals, as well as in the preparation of the energy performance contract (EPC) with guaranteed savings. Additional services were also offered by Econoler related to the contract negotiation with the ESCO and project implementation support (measure and verification (M&V) plan review, etc.).

**Centre hospitalier affilié universitaire de Québec (CHA), Support the CHA in the Implementation of ESCO Projects, Canada (2009-2015)**

Project Manager-monitoring phase and Technical Expert. Econoler provided support to the CHA for the launch and implementation of energy efficiency projects under the energy performance contracting scheme. The assignment included preparing a document for requests for expressions of interest, an adapted contract and negotiations thereto, as well as elaborating a measurement and verification plan of savings and monitoring overall project implementation.

**Hôpital Laval, Support Services for an Energy Service Company (ESCO) Project, Canada (2014)**

Project Manager. The Institut universitaire de cardiologie et de pneumologie de Québec (IUCPQ) received a letter from the Agence de la santé et des services sociaux (ASSS) de la Capitale-Nationale stating it was eligible for a grant from the Ministère de la Santé et des Services sociaux (MSSS) du Québec after the project submission document had been received and reviewed. The IUCPQ then commissioned Econoler to prepare the project submission document to be submitted to the ASSS. This document included the following: (1) description of energy efficiency measures to be implemented, (2) cost of work, (3) anticipated energy savings, (4) financing methods, (5) resolution of the Board of Directors (including the authorization for the financing plan), (6) copy of the opportunity study, and (7) measurement plan.

**RealTerm Energy, Support for the Creation of a Street Lighting Service Using an Energy Performance Contracting Approach, Canada (2013-2014)**

Project Manager. RealTerm Energy contracted Econoler to provide additional support for the creation of a street lighting service to municipalities across Canada. Econoler therefore assisted RealTerm Energy in drafting an energy performance contract, designing a measurement and verification plan and identifying the required human resources for the firm to meet its short- and long-term objectives.

**District of North Vancouver (DNV), Preparation of a Call for Tenders' Documents for the Selection of an ESCO, Canada (2009-2010)**

EPC Expert for this mandate consisting to producing the request for technical qualifications, performance contract including a template for measurement and verification plan, for selecting ESCO's to undertake the implementation of an energy efficiency project to be carried out in 50 buildings.

**Hautes Études Commerciales (HEC), Preparation of a Call for Tenders Documents for the Selection of an ESCO, Canada (2008-2009)**

Technical Expert for this mandate consisting in producing the call for tenders' documents aiming at ESCOs for an energy efficiency project to be carried out in one of HEC's buildings.

**Fonds en Efficacité Énergétique, Development of a Framework for Performance Contracts, Canada (2002-2003)**

Project Director and Main Expert for the development of an innovative contract using the ESCO approach for the financing of energy efficiency measures through subsidies, for thermal envelopes and systems using natural gas in the residential sector. The financing of the measures came from a development fund provided by *Gaz Métropolitain*, a natural gas distribution company.

**Econoler Canada (1988-1989)**

Project Energy Manager for the measurement and verification of the energy savings generated within the scope of the projects developed and implemented under the ESCO approach.

**Econoler Canada (1987-1988)**

Project Director for the realization of more than 30 energy studies within the scope of projects developed and implemented under the ESCO approach.



*Energy Efficiency***Centre hospitalier universitaire de Québec (CHUQ), Interim Support for Energy Management, Canada (2014-2015)**

Project Manager. This assignment aimed to ensure effective management of energy bills of CHUQ's 19 buildings. In addition, the Econoler experts prepared balance sheets required to compare the actual energy consumption levels with the budgetary forecasts. The various activities related to these tasks were clearly documented in detail to ensure effective knowledge transfer.

**Murox, Support in the Development of a Value-added Offer in Energy Efficiency, Canada (2008)**

Project Director for the support in the strategic and technical development of a value-added offer within the framework of the design and construction of highly energy-efficient buildings.

**Agence de l'efficacité énergétique, Study of the Opportunities and Barriers for an Energy Management Program in Quebec's Industrial Sector, Canada (2007)**

Project Director to carry out a study on the barriers and opportunities for an energy management program in the industrial sector. The study covered the review of energy management standards and programs, energy segmentation in industries and cost-effectiveness tests of the program.

**Association québécoise pour la maîtrise de l'énergie (AQME), Recommissioning Program for the Mechanical Systems of Québec's Buildings, Canada (2004)**

Project Director and Main Expert for a study on the potential and barriers to the implementation of a recommissioning project for mechanical systems in Quebec buildings'.

**École des métiers et occupations de l'industrie de la construction de Québec (EMOICQ), Technological Window in Home Automation and Energy Efficiency, Canada (1996)**

Project Director for the development of a public showcase of technologies in household automation and energy efficiency.

**Hydro-Québec, Efficiency Lighting Program (1994-1995)**

Project Director in charge of completing detailed audits and project implementation as part of Hydro-Québec's Efficient Lighting Program:

- ♦ Hôpital Saint-François d'Assise
- ♦ Hôtel-Dieu du Sacré-Coeur de Jésus de Québec
- ♦ IPL
- ♦ Centre hospitalier de l'Université Laval (CHUL)
- ♦ Polyvalente de L'Ancienne-Lorette
- ♦ Centre hospitalier régional de l'Outaouais
- ♦ Canam Manac inc.
- ♦ SCDP - 300, Saint-Paul
- ♦ Hôpital Laval
- ♦ PEPS, Université Laval
- ♦ Hôpital Hôtel-Dieu de Gaspé
- ♦ Palais de Justice de Québec, SIQ
- ♦ Hôpital Christ-Roi
- ♦ SIQ, 1020, rue Chauveau
- ♦ SIQ, SQ, Centrale de police, 5005, boul. Pierre-Bertrand

**Radio-Canada, Implementation of an Energy Billing Management Software Program, Canada (1994-1995)**

Project Director for the nationwide implementation of an energy billing management software program in every building of Canada's national public broadcaster.

**Gaz Métropolitain, Technical-Economical Study and Implementation of Projects Related to Conversion to Natural Gas, Canada (1994-1995)**

Project Director for a district heating feasibility study using the heating system of the hospital to heat several surrounding buildings within the scope of Gaz Métropolitain's PAIRE program.

**SYNERGIE Software Development, Canada (1994)**

Project Director for the development of SYNERGIE, energy management software dedicated to the financial simulation and monitoring of ESCO projects.

**Hydro-Québec, Market Study, Canada (1993)**

Engineering Manager for the first part of a project evaluating the savings potential related to improving the insulating envelope of Québec's homes (study of 1,200 homes, computer simulation of heating load, saving evaluation relative to the application of different proposals, projection of results for all of Québec's homes).

**Various Clients, Implementation of Energy Efficiency Projects, Canada (1987-1998)**

Implementation of energy audits, plans and estimates, construction supervision and/or energy monitoring for the following buildings:

*Measurement and Verification***Commission scolaire des Découvreurs (CSD) (school board), Measurement and Verification, Canada (2014-2015)**

Project Director. As part of this project, Econoler developed a methodology and performed the necessary calculations to establish the energy cost of the various CSD premises available for leasing to citizens outside of the regular business hours. This work led to the evaluation of the revenues generated by the leasing of the premises and now makes for a source of reliable information to set a fair leasing cost.

**Commission scolaire des Découvreurs, Validation of Savings Calculation of an Energy Efficiency Project Implemented under the ESCO Approach, Canada (2013)**

M&V Expert. Econoler was mandated to revise the entire measurement and verification (M&V) procedure which was intended to determine the savings achieved by an energy efficiency project implemented using the performance guarantee approach. To fulfill the mandate, Econoler also formulated recommendations so as to help make the M&V process compliant with the International Performance Measurement and Verification Protocol (IPMVP).

**Institut universitaire en santé mentale de Québec (IUSMQ), Energy Efficiency Project Coaching, Canada (2012-2013)**

M&V Expert for an energy efficiency project conducted at the IUSMQ with a budget of over \$2 million. The mandate consisted of energy monitoring for the various project phases, from the detailed study to plans and specifications to implementation. The savings were verified according to the International Performance Measurement and Verification Protocol (IPMVP).

**Murox, M&V Plan Design and Implementation Process for Stageline, Canada (2009)**

Technical Expert for this assignment consisting of a measurement and verification plan design based on EVO's International Performance Measurement and Verification Protocol (IPMVP), Option D. The project included building simulation using the EE4 software and M&V plan implementation.

**CHU Sainte-Justine (Centre hospitalier universitaire mère-enfant), Canada (2009)**

Project Director responsible for reviewing calculated energy savings submitted by Ecosystem, an ESCO previously mandated to perform an energy efficiency project for the *CHU Sainte-Justine*. This mandate guaranteed that the proposed savings were consistent with the International Performance Measurement and Verification Protocol (IPMVP) and defined actual projected savings for the duration of the project. Furthermore, the project allowed ensuring consistency between savings reconciliation reports and the measurement and verification plan initially designed.

**Centre de santé et de services sociaux de Bécancourt-Nicolet-Yamaska, Measurement and Verification of an ESCO Project Performance, Canada (2008)**

Project Director and M&V Expert for the measurement and verification of a project's performance. This project was carried out by an ESCO in 8 different buildings of a large hospital in the Mauricie region.

*Monitoring and Targeting***Hydro-Québec and Ten Manufacturing Companies, Demonstration of Monitoring & Targeting Techniques, Canada (2008)**

Monitoring & Targeting Process Specialist. Within the framework of Hydro-Québec's *Programme Piste*, Econoler demonstrated monitoring & targeting techniques in selected manufacturing businesses to identify how and where energy savings could be achieved through manufacturing process optimization.

*Financing Mechanisms***Nova Scotia Power, Energy Performance Contracting Scoping Study, Canada (2017)**

Senior Technical Expert. Scoping study to identify opportunities for and address the barriers to the use of energy performance contracting (EPC) solutions for fuel-switching projects in the Nova Scotia commercial sector. Econoler will design and propose three potential business models to support an EPC offering by Nova Scotia Power.

**Bureau de l'efficacité et de l'innovation énergétiques (BEIE) of Quebec, Financing Mechanism Design for the Implementation of Energy Efficiency Projects in Enterprises, Canada (2016)**

Project Director. Econoler identified the barriers to accessing financing adapted to energy efficiency projects in Quebec and designed appropriate solutions for the Government to eliminate these barriers. Econoler factored in the impacts of the energy transition, budgetary realities, the 2030 Energy Policy, and CO<sub>2</sub> emissions reduction objectives, all of which aimed to foster and increase assistance to EE projects.

**Natural Resources Canada (NRCan), Development of Presentation Materials for Decision-Makers in the Federal Buildings and in the Commercial and Financial Sectors, Canada (2011)**

Project Director. The Office of Energy Efficiency (OEE) has identified a number of key barriers which impede full adoption of energy efficiency options in the commercial and institutional building sector. One of these key barriers is project financing. NRCan mandated Econoler to develop presentation material for the Buildings Division (BD) of the OEE at Natural Resources Canada. The presentation material developed by Econoler conveyed high-level strategic messages on the value proposition of building energy efficiency in a manner tailored to senior decision makers.

**Agence de l'efficacité énergétique, Energy Efficiency Financing in the Industrial Sector, Canada (2009)**

Technical Expert responsible for conducting an opportunity study to determine potential barriers related to EE financing in the industrial sector and evaluating the most relevant options to improve outcomes.

*Cogeneration and District Heating***Centre hospitalier universitaire de Québec, Canada (1999-2000)**

Project Director for the realization of a study on the technical and financial feasibility for the implementation of a district heating system for the downtown sector of Québec City.

**Daishowa TIRU, Cogeneration Plant, Canada (1998)**

Project Director for the development of a turnkey proposal on behalf of TIRU for the implementation of a 10 MW biomass cogeneration unit for the benefit of Daishowa, the largest pulp and paper mill in the province of Québec.

**Gaz Métropolitain, Market Study on Natural Gas Cogeneration Projects, Canada (1995)**

Project Director for a market study on the potential for natural gas cogeneration in the commercial and industrial market in the province of Québec.

**Hôpital Christ-Roi, Cogeneration Study, Canada (1995)**

Project Director for the realization of a technical and financial feasibility audit for the implementation of a 5 MW natural gas turbine cogeneration unit for the *Hôpital Christ-Roi*.

**Scierie Raoul Guérette inc., Cogeneration Plant, Canada (1994)**

Project Director for the realization of a technical and financial feasibility audit for the implementation of a 20 MW biomass cogeneration unit for one of Québec's major saw mills.

**Cascades, Implementation of a Cogeneration Plant, Canada (1991)**

Project Director for the realization of a technical and financial feasibility audit for the implementation of an 18 MW biomass cogeneration unit for that important Québec pulp and paper mill.

*Program Design***International Development Research Centre (IDRC), Energy Efficiency Strategies for Low-carbon Development After the 2015 Paris Agreement, Canada (2016)**

Project Director. Econoler was commissioned to assess the potential and importance of energy efficiency (EE) in reducing greenhouse gas (GHG) emissions, alleviating poverty and positively impacting economic growth in developing countries. Econoler demonstrated how EE can help Canada meet its pre-2020 Paris Agreement commitments to the Green Climate Fund in supporting least-developed countries and why it should be included in Canada's international climate action plans. Econoler developed a methodology for identifying the target countries where to focus support, implement EE and achieve the greatest impact in the five-year window. Econoler also worked with experts in each target country to identify the key strategies and approaches for implementing EE; these strategies and approaches would be further developed through a more comprehensive research project to be done in a subsequent phase.

*Trainings***Natural Resources Canada (NRCan), Preparation, Coordination and Delivery of an Energy Efficiency Financing Workshop, Canada (2017-2018)**

Project Manager. Econoler was mandated by NRCan to prepare, organize and deliver a one-day EE financing event in Ottawa. The objective of the event was to convene a diverse group of key stakeholders to enable an important policy discussion that examines market-based mechanisms, tools, and enabling public policy initiatives required to overcome barriers and facilitate the development of a retrofit economy in Canada.

**Natural Resources Canada (NRCan), Training Session for the Federal Buildings Initiative (FBI), Canada (2012)**

Project Director and Main Training Expert mandated to lead a training session on Natural Resources Canada's Federal Buildings Initiative, which is intended to promote the use of performance contracts in order to develop and carry out energy efficiency projects.

**Natural Resources Canada (NRCan), Trainer for the Workshop "Dollars to \$ense", Canada (1999-2009)**

Training Expert for the "Dollars to \$ense" workshops in the province of Québec. These training courses have been developed by the Office of Energy Efficiency of Canada and have been offered to various clients nationwide since 1999.

**Efficiency Valuation Organization (EVO), Measurement and Verification Training, Canada (2008-2009)**

Training Expert on the International Performance Measurement and Verification Protocol (IPMVP) for the one-day training events held throughout the province of Québec.

**Training session: Certified Measurement and Verification Professional (CMVP), Canada (2008)**

Training Expert. Preparation and presentation of a three-day training session designed to certify participants as Certified Measurement and Verification Professionals (CMVPs) in energy performance, a title conferred by the Association of Energy Engineers (AEE). This also includes monitoring an exam at the end of the training session. Participants in the CMVP session learn how to design a measurement and verification (M&V) strategy for their own or for their clients' projects in compliance with the International Performance Measurement and Verification Protocol (IPMVP), and later to manage the savings verification process for the development of internal and external reports.

**Training session: Certified in the use of RETScreen 4 (CRU), Canada (2004)**

Preparation and presentation of a training session leading to certification in RETScreen 4 software. The software analyzes clean energy projects and helps decision makers determine quickly and cheaply whether renewable energy, energy efficiency or cogeneration projects are technically and financially viable.

**Association québécoise pour la maîtrise de l'énergie (AQME), Development of a Training Course on Energy Management for the Water Treatment Sector, Canada (2002-2003)**

Project Director for the development of a training course on energy management for the water treatment and production sector. This training was given across the province of Québec in 2003.

**Association québécoise pour la maîtrise de l'énergie (AQME), Development of Training Courses on Demand-Side Management and Energy-Efficient Lighting in Buildings, Canada (2002-2003)**

Project Director for the development of two training courses: one on demand-side management in building and another on energy-efficient lighting technologies. Those courses were offered in the whole province of Quebec.

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**PUBLICATIONS:**

*The Bulgarian Energy Efficiency Fund: A success story and an inspiring example of energy efficiency financing*, 2014

*State of Energy Report – Dubai 2014*, Co-author of the Demand Side Management chapter, Supreme Council of Energy, launched for Expo 2020 Dubai UAE, 2013

*Joint Public-Private Approaches for Energy Efficiency Finance: Policies to scale-up private sector investment*, International Energy Agency, 2012

*Guidance on EE Financing in Public Buildings*, European Investment Bank, 2012

*ESCO World Outlook*, Co-author, The Fairmont Press Inc., 2012

Seven best practice booklets for energy efficiency practitioners in the LAC Region, Inter-American Development Bank, 2012

*ESCOs Around the World, Lessons Learned in 49 Countries*, co-author, The Fairmont Press Inc., 2009

*L'apport du partenariat public-privé dans le financement des projets en efficacité énergétique*, in partnership with IEPF and the Agence de l'efficacité énergétique, 2009

*Partenariat public-privé dans le financement de l'efficacité énergétique et du développement des énergies propres en Afrique*, IEPF, 2006

*Why Hungary, lessons learned from the success of the Hungarian ESCO Industry*, ACEEE, May 2004

*Demand-Side Management from a Sustainable Development Perspective – Experiences from Québec (Canada) and India*, IREDA, 2003

*Guide to Working with Energy Services Companies in Central Europe*, OECD and Climate Technology Initiative, 2003

*The Evolution of ESCOs in Developing Countries and Economies in transition, Energy efficiency in Russia*, transfer of Canadian know-how Newsletter, fall 2002

*La maîtrise de la demande d'électricité dans une perspective de développement durable*, l'Agence de l'efficacité énergétique du Québec, Communications Science-Impact, 2001

*ESCOs in Emerging Markets*, the Bulletin on Energy Efficiency, IREDA, India, February 2001

*Energy Efficiency in Aluminum Plants Guidebook*, Association de l'industrie de l'aluminium du Québec inc., 1998

*Energy Efficiency Projects and their Financing Mechanisms*, IEPF, Collection Cahier Prisme no 7, 1997, re-published in 1999 (publication translated in Arabic by the United Nations, 2000)

*Design Optimization of Cooling Equipment*, La Maîtrise de l'énergie, AQME, March 1995

*Energy Efficiency through Staff Mobilization*, La Maîtrise de l'énergie, AQME, December 1994

*Arenas Mechanical and Electrical Equipment Management Guidebook*, Association des arénas du Québec, 1992

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#### **LECTURES:**

*World Energy Efficiency Congress, the development of EVO activities and evolution of IPMVP*, Washington DC, 2014

*Engineers Ireland, the development of EPC in Ireland, international experiences*, Dublin, June 2014

*World Bank, World ESCO Outlook*, Washington DC, May 2013

*ESCO Europe 2013, The current state of Measurement and Verification for EPC projects in Europe*, Copenhagen, January 2013

Building performance Congress, The Bulgarian Energy Efficiency and Renewable Energy Fund, Frankfurt, April 2012

Latin American Regional Dialogue on the Development of NAMAs, The Bulgarian Energy Efficiency and Renewable Sources Fund: Unlocking the potential of EE projects, The Center for Clean Air Policy, Bogota Colombia, April, 2012

ABB Technology and Market Assessment Forum, Houston, Energy Savings through Innovative Approaches, February 2012

ESCO Europe 2012, Where can ESCO improve, London, England, January 2012

Greengov, Energy Service Performance Contracting and the importance of Measurement and Verification, Washington DC, November 2011

The World Bank, M&V for Energy Saving: The International Performance Measurement and Verification Protocol as a world reference, September 2011

IEA-IIP Policy Pathway on Energy Management Programmes, M&V for Energy Savings "IPMVP" as a world reference, Paris, September 2011

Inter-American Development Bank, Energy Performance Contracting a review of the status in IDB countries and perspective for development, Washington DC, September 2011

EE Global, Measurement and Verification, how best we measure success, Brussels, April 2011

*Americana, Mesurage et vérification du rendement énergétique : un atout pour l'efficacité énergétique*, Montréal, Canada, March 2011

Energy Efficiency meetings, The importance of M&V and The role of an IEEFP, UNECE, October 2010

ESCO Europe 2010, Measurement and Verification, A fundamental issue for EE and EPC projects, Lisbon November 2010

Ramping-up Private Sector for Energy Efficiency Investment to Meet the 450 ppm Scenario, International Energy Agency, Paris, France, June 2010

*Gas natural Union Fenosa*, Measurement and Verification, A fundamental issue for EE and EPC projects, Madrid, October 2009

KfW and GIZ joint conference, Energy Efficiency Financing, Frankfurt, Germany, May 2009

EE Global, Energy Efficiency Financing, a myth or a reality, Paris, France, April 2009

Asia Energy Week, IPMVP training session, Brussels, Belgium, October 2008

ESCO Europe 2008, IPMVP training session, Kuala Lumpur, Malaysia, June 2008

*Colloque IEPF- AUF, la réduction des gaz à effet de serre, La Francophonie à l'heure des choix*, Québec, Canada, June 2008

*Congrès de l'AQME 2008, Le M&V, constat pour le Québec et pratique Internationale*, Trois Rivières, Canada, April 2008

UNFCCC, 5<sup>th</sup> CDM Coordination Workshop, Small-Scale Methodologies and Deemed Savings Issues, Bonn, Germany, April 2008

World Bank, EE working group, Experience in Energy Efficiency Funds, the Case of Bulgaria and Egypt, Washington, USA, April 2008

ESCO Europe 2007, IPMVP training session, Nice, France, October 2007

The Bulgarian Energy Efficiency Fund, ESCO Europe 2006, Prague, September 2006

The development of an International Energy Efficiency Financing Protocol, ESCO Europe 2006, September 2006

The challenge of ESCO projects in the public sector in Asia, Asian Energy Week, Beijing, April 2006

Utility DSM, an interesting avenue for energy efficiency in Asia, Asian Energy Week, Beijing, April 2006

Carbon financing for Energy Efficiency projects, World Bank Energy Week, Washington, March 2006

Measurement & Verification for ESCO projects, 1<sup>st</sup> Asian ESCO conference, Bangkok, Thailand, October 2005

Measurement & Verification for ESCO projects, ESCO Europe 2005, Vienna, Austria, October 2005

Development of the ESCO Concept in Romania, European Union, Bucharest, Romania, May 2005

Development of the ESCO Concept in Romania, UNDP Romania, Cluj, Romania, May 2005

Electricity End-use Efficiency in Buildings and Energy Services in New Member States and Candidates Countries, Development of the ESCO Concept in Central Europe, European Community, Brussels, Belgium, December 2004

CDM Project in India, Case Study, Montreal, Canada, November 2004

Second joint lecture of CTI on the Dissemination of Technology in Eastern Europe and CIS, Vienna, Austria, October 2004

Challenge for Metering Business – An ESCO Point of View, CRM CIS Europe 2004, Berlin, Germany, September 2004

Energy Efficiency for Municipalities in Romania, Sustainable City Initiative, Bucharest, Romania, 2004

DSM for Climate Change Project in India, 8th Canadian Pollution Prevention Roundtable, Ottawa, May 2004

ESCOs Activities on the International Market, and Possibility of ESCO in Developing Countries, 3<sup>rd</sup> Japanese ESCO Association (JAESCO), Tokyo, Japan, February 2004

The RETScreen Software, Commercial Mission of the Canadian Government, Bucharest, Romania, October 2003

Financing Projects in the Energy and Sustainable Development Sectors, Agence intergouvernementale de la francophonie (AIF), symposium on the access to international financings, Paris, September 2003

Why Hungary? An ESCO Success Story, the European Commission – Joint Research Centre, First European Conference on ESCO, Milan, 2003

International Financing Mechanisms for the Realization of Wind Energy Projects and Programs, IEPF, seminar on the development of the wind energy, Nouakchott, 2003

Financing of Energy Efficiency Projects in Tunisia, *Agence Nationale des Énergies Renouvelables (ANER)*, energy efficiency week - 2002, Tunis, 2002

The Development of the Energy Services Concept in North America, Western Europe and Central Europe, International Energy Agency, Budapest, 2002

The Development of the Energy Services Company Concept, Cleantech 2001, New Delhi, India, 2001

The Development of the ESCO Concept, ESKOM workshop financed by the E7, Johannesburg, South Africa, 2000

The Development of Project to Implement ESCOs in *Côte d'Ivoire*, IEPF, 10<sup>th</sup> anniversary Congress, Québec, 2000

The ESCO Concept in the Commercial and Industrial Sector, United Nations seminar on energy efficiency, Havana, Cuba, 1999

The Energy Efficiency Seminar "*Le Gros Bon \$ens*", Natural Resources Canada, Province of Québec, 1997, 1998, 1999 and 2003

Energy Management for Building Owners, Institut de développement urbain du Québec, Conseil Régional de Québec, Québec, 1996

Using an Energy Billing Management Software, *Association des arénes du Québec*, Québec, 1990



**AWARDS:**

## AEE "Legend in Energy"

Special lifetime recognition granted by the Association of Energy Engineers to qualified professionals at the 30<sup>th</sup> Anniversary of the World Energy Engineering Congress (WEEC) in Atlanta, GA, USA. 2007.

## Gala Énergia Award, exportation sector, 2003

Development and implementation of an efficiency project under an energy service approach for the head office of the African Bank of Development in Côte d'Ivoire.

## Climate Technology Leadership Award 2000

In recognition of Econoler's efforts to accelerate the deployment and diffusion of climate-friendly technologies, especially into the developing world and economies in transition.

## Gala Énergia Award, exportation sector, 2000

Creation of an energy services enterprise (ESCO) in Tunisia.

## Show of New World of Business, energy sector, 2000

Creation of an energy services enterprise (ESCO) in Tunisia.

## Gala Énergia Award, institutional sector, 1995

Integrated energy management project for the *Hôtel-Dieu de Québec*.

## Highest distinction award for energy management of health care buildings in Canada, 1994

Integrated energy management project for the *Hôtel-Dieu de Québec*.

## Prize of Excellence from South Korean Government, 1990

Energy efficiency technology transfer and financing projects for Samsung Corp. in South Korea.

## Canadian Consulting Engineer Award, 1989

Technology transfer, software implementation and ESCO start-up projects for Samsung Corp. in South Korea.