

RG-T2386: Enhanced Energy Dossiers, Energy Trade & Institutional Indicators
TC Document

I. Basic project data

▪ Country/Region:	Regional
▪ TC Name:	Enhanced Energy Dossiers: Energy Trade & Institutional Indicators
▪ TC Number:	RG-T2386
▪ Associated Loan/Guarantee Name:	
▪ Associated Loan/Guarantee Number:	
▪ Team Leader/Members:	Team Leader: Ramón Espinasa (INE/ENE). Team Members: Martha Gutiérrez (INE/ENE), Jeremy Harris (INT/INT), Carlos Hinestrosa (INE/ENE), Jorge Mercado (INE/ENE), Carlos Sucre (INE/ENE), Javier Bedoya (LEG/SGO), Lisa Lutz (LEG/SGO)
▪ Date of TC Abstract authorization:	18 July 2013
▪ Donors providing funding:	Regional Infrastructure Integration Fund (RIIF)
▪ Beneficiary:	Countries in Latin America and the Caribbean that are borrowing members of the IDB.
▪ Executing Agency and contact name:	Inter-American Development Bank, through the Energy Division (INE/ENE)
▪ IDB Funding Requested:	900,000 USD
▪ Local counterpart funding, if any:	
▪ Disbursement period (which includes Execution period):	Disbursement: 24 Months Execution: 22 months
▪ Required start date:	1 January 2014
▪ Types of consultants:	Individual
▪ Prepared by Unit:	INE/ENE
▪ Unit of Disbursement Responsibility:	INE/ENE
▪ TC Included in Country Strategy (y/n):	N; N
▪ TC included in CPD (y/n):	
▪ GCI-9 Sector Priority:	Regional integration; environmental sustainability; climate change
▪ Taxonomy	Research & Dissemination

II. Description of Associated Loan/Guarantee

2.1 No loans or guarantees associated.

III. Objective and Justification

3.1. The general objective of this technical cooperation is to increase and expand the knowledge and research developed under RG-K1218 Energy Matrix for Countries in LAC and RG-T1884/RG-T2048 Energy Innovation Center through three specific products: (i) Caribbean & Southern Cone energy dossiers; (ii) energy trade flow database; (iii) institutional framework index.

3.2. Using the INE/ENE methodology, this operation will: (i) produce the energy dossiers for the countries of the Caribbean and the Southern Cone, which include the current regulatory framework of the energy sector in each region, the current energy consumption and production patterns, along with the historical evolution since 1971 of the institutional arrangements and energy flows of each nation; (ii) construct an energy trade database depicting the import and export of all sources of energy for all countries in the region, current and historical, through a methodology to be developed at the Bank and with research carried out at the Bank that will inform regional energy integration efforts gaining strength throughout the region, itself heavily reliant on imported secondary energy for demand and exported primary energy for income and thus exposed in terms of national energy

matrices; and (iii) it will construct an index that summarizes the institutional arrangements of the energy sector of each country in LAC, in a comparable fashion across time and countries.

- 3.3. Over the past two years, using access to information compiled and published by the International Energy Agency (IEA), researchers at the Energy Division (INE/ENE) have developed in-house an innovative quantitative methodology that allows for cross country and inter-temporal comparisons on energy consumption and production patterns.
- 3.4. Under that methodology, INE/ENE has produced a comprehensive database summarizing the yearly flow of all sources of energy for all the countries in the Latin America & Caribbean (LAC) region that are members of the IADB, along with certain benchmark countries in the world, including the United States, Europe, China, India, Canada, Russia, Australia, Germany, and Japan - among others. The historical evolution of the energy flows has been produced for all countries in Central America, the Andean region, along with some of the benchmark nations. This quantitative work is accompanied by an in-depth analysis of the institutional arrangements that govern the energy sector in each of the countries of LAC. This institutional and policy mapping includes an analytical description of the policies and institutions responsible for regulating the energy sector at the national level along with that sector connections to other areas of the economy. The description of institutional arrangements is made more thorough by a discussion of the industrial organization of the energy sector.
- 3.5. The quantitative and qualitative analytical work are combined in order to create a given country's energy dossier, an innovative knowledge product that enables policy dialogue, institutional strengthening, and project preparation and implementation on a number of energy initiatives for the region. The dossiers are used as inputs to country programming activities, as well as in the formulation of initiatives in the respective countries' energy sectors, and in the design of investment programs and projects. The research has proven to be a valuable resource to the Energy and other divisions such as INE/CCS, CID, CCB, CSC, VPP, EXR, and OVE. The information is being used as an input into Country Strategies and Sector Notes.
- 3.6. These energy dossiers are made available to stakeholders and interested parties through RG-X1171 Energy Innovation Center – Phase II, an operation funded by the Government of Alberta, through the building of an online platform that houses some of the database information, both quantitative and qualitative. The online platform is an interactive tool for researchers and stakeholders in the energy community of Latin America & the Caribbean and elsewhere. This operation is also tasked with expanding the energy flow database with ground-level energy infrastructure information along with energy endowment information for all the countries in Latin America and the Caribbean. Alongside those products, the online platform under construction will also host the work produced under this technical cooperation. In essence, the activities carried out under RG-T2386 feed and expand the products offered to researchers and interested parties via the online platform – to be launched at the end of 2013.
- 3.7. The issue of data collection is central to the proper management and execution of this technical cooperation. In that regard, it must be noted that the Energy Division has benefitted from a close collaborative relationship with a number energy data collection agencies. Chief among these are the strong collaborations with the International Energy Agency (IEA) and the Organización Latinoamericana de Energía (OLADE). The former has supplied the bulk of the information used in the construction of the energy dossiers and is an integral part of the methodology while the latter has provided the research team valuable background information not used as input in the final products. Under this technical cooperation, the information provided by OLADE will continue to be used for background and not as final input to products. It is similarly important to note that while all information used and disseminated under this technical cooperation will be data already available publicly to any interested party, the methodology developed along with the compilation into a single set of information provides value added and an important tool for analysis.
- 3.8. The sustainability of the project is considered as follows. For the construction of energy dossiers, the online platform launched under RG-X1171 will be the guarantee of their continual updating and publication, while the research team around the platform will continue to produce the framework analysis integral to each dossier. For the energy trade component, ENE has built a strong collaborative relationship with the Integration & Trade (INT) to ensure data provision out of the database managed and hosted by the INTrade Information System on Trade and Integration.

- 3.9. As described in further detail below, this technical cooperation produces three energy datasets: energy flows, energy trade flows and energy sector organization index. These datasets are intended to inform recommendations and energy policy options and programs by the Bank and key stakeholders of the region energy sector. It therefore has direct incidence on the following area of intervention by the Regional Infrastructure Integration Fund (RIIF): Strengthened institutional capacities to implement and participate in cross-border and regional initiatives. The direct relationship between this technical cooperation and the Fund's indicators is described in detail in the activities under the components of the technical cooperation and in further detail under the Indicative Results Matrix in section IV.

IV. Description of Activities & Outputs and Budget

- 4.1. **Component I – Caribbean & Southern Cone Energy Dossiers:** This component aims at increasing the stock of knowledge about the characteristics and functioning of the energy sector in the Caribbean (CCB) and Southern Cone countries (CSC). It will gather and centralize quantitative data about energy resources and describe the institutional capacity, industrial organization, and regulatory structure of the energy sector throughout CCB and CSC. Information about the energy flows in these countries is scarce and existing data is disparate and cannot be easily compared. By applying a standardized methodological approach statistical distortions can be minimized and energy matrixes can be utilized to describe and compare the flow of energy in each country for a given period. The institutional capacity and competence of the major players in the energy sector varies significantly among these countries. By carrying out an analysis of the historic and current set-up of the energy sector, this TC will allow for comparison of the institutional capacity, industrial organization, and regulatory framework in each of CCB and CSC. This will enable policy makers to identify areas of institutional weakness and offer suggestions on how to continue or move towards a diversified and sustainable energy matrix.
- 4.1.A. **Activity I-A – Energy Flows:** This activity finances the contracting of consultant services to collect and organize data and information about the energy flows in CCB and CSC and present it in the form of energy matrixes. The energy matrixes will identify the current principal sources of energy, show how primary energy is converted, and indicate how and by what sectors energy is subsequently consumed
- 4.1.B. **Activity I-B – Institutional Mapping:** This activity finances the contracting of consultant services to research, identify and describe the institutional settings (industrial organization and regulatory framework) that affect the functioning of the energy sector in CCB and CSC. The effort will identify potential areas of institutional reform to more efficiently produce, distribute, and consume energy resources and to increase the countries' potential to diversify their energy makeup. Based on this information, legal and/or institutional reform needs will be identified. These findings will be key in guiding and providing the right incentives for future investments in the energy market in CCB and CSC.
- 4.1.C. **Activity I-C – Publication & Dissemination:** This activity finances the publication of energy dossiers that will present the results of activities I-A and I-B. The activity generates conditions to disseminate the findings of the energy dossiers in the form of (i) targeted distribution of the energy dossiers internally and externally with key public officials and private sector leaders; (ii) meetings and roundtable discussions with key decision makers and opinion leaders with the aim to share findings and recommendations; (iii) dissemination of the energy dossiers via electronic and mass media. These energy dossiers will be housed at the Energy Division website through the Bank Repository of Institutional Knowledge, and the information will also be presented at the inter-active online platform currently under development by the Energy Innovation Center.
- 4.1.D. **Activity I-D – Energy Flow Capacity Building Workshops:** In coordination with activity II-D below, this activity consist of carrying out two workshops – one on Caribbean nations and another on Southern Cone nations - with public sector stakeholders and other interested parties to present the energy flow and dossiers for each country in the region partaking. The objective of these workshops is to transfer the knowledge generated by this component to individuals involved in identifying investment priorities at the national level – considering the crucial cross-border aspect of energy at all times. The workshop's goal is to provide each participant with a thorough analysis of the current and historical energy matrix for the

particular country and therefore provide background useful for design and implementation of energy policies on production and consumption balances.

4.2. Component II – Energy Trade Flows: This component finances the construction of a new dataset on the international trade of primary and secondary energy of the countries in LAC using comparable data over time and across countries using a singular methodology. The energy flow data set built by INE/ENE includes important information on energy trade as it describes the amount of primary and secondary energy that a country imports and exports, but it lacks information on the origins of energy imports and on the destinations of energy exports. It is imperative for the region's stakeholders in energy to understand how energy trade affects their matrices. They would benefit from a dataset that places a given country on its proper international energy trade location in order to better understand the reliance on external factors for meeting energy demand or generating income for that given nation. This enhances the ability of stakeholders to make informed decisions for meeting their current and prospective energy needs by taking into account a part of that nation's energy security situation.

4.2.A. Activity II-A – Methodology Development: This activity finances the development of a methodology allowing for the construction of a database that uses only public sources of information the comparable across all countries and all time periods, such as the INTrade Information System on Trade and Integration and UNComtrade. The methodology developed must be sustainable over time, expressed in common units of measurements, such as thousand barrels of oil per day. The methodology will be informed by the approach used under the energy flow project and will be developed in consultation with partners at the Integration and Trade (INT) sector.

4.2.B. Activity II-B – Database Exchange & Trade Circumstance Assessment: This activity finances the contracting of consultant services to collect, organize the energy trade data and information on a country-by-country basis and using the methodology developed in activity II-A in a unified fashion that is manageable and sustainable over time. This process will take a similar approach to that used under RG-T1884 and RGT2048 in the construction of the energy flow database. Upon the construction of the database, this activity will finance an assessment of these energy trade patterns in country documents that will be incorporated into the Energy Dossier of the particular country, thus enhancing the reach and scope of the work carried out in the previous technical cooperation projects.

4.2.C. Activity II-C – Publication & Dissemination: This activity finances the inclusion of energy trade flow descriptions for each country in the publication of each country energy dossier, along with the publication of the information in country documents that stand on their own. The activity generates conditions to disseminate the findings of research in energy trade flows with targeted distribution internally and externally to public officials and private sector leaders, meetings and discussions with decision makers to share findings, and dissemination of the energy trade flow descriptions via electronic media.

4.2.D. Activity II-D – Energy Trade Capacity Building Workshops: In coordination with activity I-D and upon the construction of the energy trade database and its analysis carried out in activity II-B and in coordination with the dissemination activities under II-C, this activity consist of carrying out workshops – no more than two – with public sector stakeholders and other interested parties to present the energy trade situation assessment and analysis with the objective to transfer the knowledge generated by this component to individuals involved in the cross-border aspects of energy in the particular country. The workshop's goal is to provide each participant with a thorough knowledge of his/her country's energy trade situation and provide useful background for implementing cross-border and regional infrastructure initiatives with respect to energy.

4.3. Component III – Regulation & Industrial Organization Index: This component finances the construction of an index amassing the objective characteristics of regulations, the industrial organization of the market, and the institutional structure of the electricity and hydrocarbon subsectors of the 26 countries in the region since the 1980s. This effort compliments technical cooperation RG-T2201/RG-T2327 Sustainable Energy Rating for Latin America and the Caribbean, which seeks to build an index on the performance of the main electric sector participants through surveys and metrics on the current situation. Similarly, it will continue and enrich the work carried out under RG-T1884/RG-T2048 Energy Innovation Center as it consolidates under a single, homogeneous

database all the research produced under those technical cooperation agreements. The information used under this Component III will be derived exclusively from public sources of information.

- 4.3.A. **Activity III-A – Variable & Index Design:** The activity develops a parameterization methodology for qualitative information on the main characteristics of regulations, institutions and industrial organization of each activity and products under the energy sector. In this sense, it will use the extensive work of information collection carried out for RG-T1884 and RG-T2048 to identify the variables requiring construction. The objective is to build dichotomic and/or polytomic variables, specific to each subsector, activity, and energy product that can convey, in a comparable and homogenous manner, the characteristics of those markets for each country and year. Once those variables are established, an index will be designed that will present the set of characteristics. External consultant, along with bank specialists, will design these variables during working sessions held at the Bank.
- 4.3.B. **Activity III-B – Annual Index Construction:** This activity finances the constructing of a consultant for the construction of the database using the parameterization methodology designed under activity III-A. The consultant will use as a basis the information compiled in the drafting of the energy dossiers for the countries in the LAC region. The product will be a database with annual values for all countries in the region that will be used to calculate the annual index designed in activity III-A.
- 4.3.C. **Activity III-C – Institutional Index Assessments:** The parameterization of the sector characteristics, such as current laws, current institutions, market share by company, trade balance, number of companies, tariff structure, among others, will allow for the construction of country assessments providing (i) an analysis of the historical evolution of the institutional characteristics in the different energy markets of each country; (ii) an illustration of the differences between countries over time as it pertains to their regulatory framework, industrial organization and institutional structure; (iii) quantitative analyses on the determining institutional, industrial organization, and regulatory factors that explain performance in the energy sector; and (iv) public policy recommendations to the particular context of each national energy sector.
- 4.3.D. **Activity III-D – Publication & Dissemination:** The results of this component will be published in electronic formats and presented in working groups and presentations organized by INE/ENE. A graphic design and visualization effort will be carried out to best present these findings in a user-friendly design and format to facilitate analysis of findings.

Indicative Results Matrix

	RIIF Results Framework	Indicator	Baseline	Target 2013	Target 2014	Target 2015	Data Source
Intermediate outcome	Strengthened institutional capacities to implement and participate in cross-border and regional infrastructure initiatives	Number of institutional units initiating reforms. <u>At least 2 (two) Latin American & Caribbean country issuing a report on energy security and trade.</u>	0	0	0	2	Government report.
Immediate outcome	Improved knowledge and skills among individuals involved in cross-border and regional infrastructure initiatives.	Number of professionals successfully trained (receiving certification) <u>At least 30 (thirty) Latin American & Caribbean energy sector government functionaries receiving certification on energy flows, energy trade flows and sector organization index</u>	0	0	15	30	IDB report.
Output	Training delivered to individuals involved in cross-border and regional infrastructure initiatives.	Number of professionals who received training (disaggregated by gender)					
		<ul style="list-style-type: none"> <u>2 (one) workshops to energy sector government officials on energy flows in the Caribbean and Southern Cone</u> <u>1 (one) workshop to energy sector government officials on energy trade flows in Latin America</u> 	0	0	2	2	Project files at the IDB.

		Number of sub-topics in which training has table place.				
		• <u>2 (two) reports on training on energy flows in the Caribbean and Southern Cone</u>	0	0	1	1
		• <u>1 (one) report on training on energy trade flows in Latin America</u>	0	0	1	1

Supervision of the activities will be carried out by INE/ENE Lead Specialist Ramón Espinasa. The team leader will report on outputs and immediate outcomes – per RIIF Results Framework – on an annual basis and on intermediate outcomes at the end of each component. All activities and printed or digital material will name the RIIF and its donors (Canada, Colombia, Mexico, Spain and the USA) as the source of funding.

Indicative Budget

Component/Activity	Description	IDB / Fund Financing (US\$)	Local Counterpart (US\$)	Total Financing (US\$)
Component I	This component will carry out the following: (i) Construct energy flow databases; (ii) map institutional framework; (iii) produce energy dossier by country; and (iv) organize workshops.	225,000	0	225,000
Component II	This component will carry out the following: (i) Develop methodology; (ii) construct trade database.	225,000	0	225,000
Component III	This component will carry out the following: (i) variable & index design; (ii) institutional index construction; and (iii) carry out institutional index assessments.	225,000	0	225,000
Publication & Dissemination	Publishing of materials under Components I, II and III; workshops under component I & II; and working group meetings under components I, II, and III.	75,000	0	75,000
Travel (1)		75,000	0	75,000
Evaluation		25,000	0	25,000
Contingencies		50,000	0	50,000
Total		900,000	0	900,000

(1) Consultant and staff travel allowed.

V. Executing agency and execution structure

5.1. This is a Bank-originated technical cooperation, aimed at deepening and broadening the work carried out under RG-T1884 and RG-T2048 so that it is possible to provide the information and knowledge necessary for the Energy Division to fulfill the Bank's commitment to support mitigation and adaptation efforts of borrowing members while meeting their developmental and energy requirements. It is imperative that knowledge and understanding of the region's energy sector and energy systems is fostered at the Bank. This TC is an opportunity to carry out that task. The Bank will use the knowledge generated through this TC to the benefit of the borrowing member countries.

5.2. The execution of this TC will provide a learning, knowledge transfer and data gathering opportunity for Bank staff involved on all aspects of the energy sector and extractive resources, allowing the bank to expand its support to borrowing member countries to providing a more complete service platform to more countries in the region and in newer areas such as energy security. Consequently, for these reasons it is critical that this TC be Bank-executed.

VI. Major issues

- 6.1. The main risk behind this technical cooperation is the availability of reliable data and information. The Caribbean energy sector is notorious for its lack of publicly available information, including data on consumption, production, and trade flows. The staff is well aware of this concern and efforts have been made to lessen this risk. There has been cooperation established within INE/ENE and between INE/ENE and the pertinent regional departments in order to foster the sharing of information. This has been successful in the past and the model will be applied in the future.
- 6.2. A secondary risk is the potential lack of information on energy trade patterns and the development of the energy trade methodology. This risk is controlled by collaborating with the Integration & Trade (INT) sector in order to ascertain which sources of information are most reliable and gathering insights into methodology development.

VII. Exceptions to Bank Policy

- 7.1. No exceptions to Bank policy are foreseen.

VIII. Environmental and Social Classification

- 8.1. According to the ESG toolkit, the classification of this technical cooperation is C, i.e. no environmental or social risks expected. See environmental filters:

8.1.A. Safety Policy Filter Report (SPF)

8.1.B. Safeguard Screening Form (SSF)

Required Annexes:

- I. Terms of Reference for activities/components to be procured
- Component I – IDBDOCS#38213225
 - Component II – IDBDOCS#38213235
 - Component III – IDBDOCS#38213238
- II. Procurement Plan



Alexandre Meira da Rosa
INE Manager

