



Inter-American  
Development Bank

**CTF–IDB ENERGY EFFICIENCY FINANCING  
PROGRAM FOR THE SERVICES SECTOR**

Colombia Energy Efficiency

IDB PUBLIC SECTOR  
CTF PROPOSAL

## COLOMBIA

### CTF-IDB ENERGY EFFICIENCY FINANCING PROGRAM FOR THE SERVICES SECTOR

#### PROPOSAL FOR SUBMISSION TO THE CTF TRUST-FUND COMMITTEE

#### TABLE OF CONTENTS

##### PROJECT SUMMARY

I.	DESCRIPTION AND RESULTS MONITORING.....	2
A.	Background.....	2
B.	The problems and their factors .....	7
C.	Justification.....	8
D.	Objective, components and characteristics.....	9
E.	Key results indicators .....	10
II.	FINANCING STRUCTURE AND MAIN RISKS .....	11
A.	Financing instruments.....	11
1.	Origin and use of resources .....	11
B.	Fiduciary risks .....	12
C.	Environmental and social safeguard risks .....	12
D.	Development and public management/governability risks.....	12
III.	IMPLEMENTATION AND MANAGEMENT PLAN .....	12
A.	Summary of implementation arrangements.....	12
B.	Summary of arrangements for monitoring results .....	14

##### Annexes:

- Annex I: Characteristics of the Program
- Annex II: Fit with CTF Investment Criteria
- Annex III: Technical Cooperation Objectives, Components and Activities.

## ABBREVIATIONS

CIFs	Climate Investment Funds
CCLIP	Conditional Credit Line for Investment Projects
CTF	Clean Technology Fund
CONPES	Colombia Policy Document
COTELCO	National Association of Colombian Hotels
DTF	fixed term deposits , i.e. Depósitos Termino Fijo
EA	Executing Agency
EE	Energy Efficiency
ESMR	Environmental and Social Management Report
ESS	Environmental and Social Strategy
GHG	Greenhouse Gases
GDP	Gross Domestic Product
GCI-9	Ninth General Capital Increase
IDB	Inter-American Development Bank
IP	Investment Plan
IFC	International Finance Corporation
LCDNS	Low Carbon Development National Strategy
LFIs	Local Financial Institutions
MCIT	Ministry of Commerce, Industry and Tourism
MSMEs	Micro, small and medium enterprises
NPCP	National Policy for Competitiveness and Productivity
NDP	National Development Plan
NPPT	National Plan for Productive Transformation
POD	Proposal for Operation Development
PROURE	Program of Rational and Efficient Use of Energy and Other Forms of Non-conventional Energy
SSF	Safeguard and Screening Form for Screening and Classification of Projects
UNFCCC	United Nations Framework Convention on Climate Change
UPME	Colombian Government's Energy and Mining Planning Unit

## PROJECT SUMMARY

### COLOMBIA

#### IDB-CTF ENERGY EFFICIENCY FINANCING PROGRAM FOR THE SERVICES SECTOR (CO-L1124)

#### MITIGATION OF GHG EMISSIONS THROUGH ENERGY EFFICIENT INVESTMENTS IN HOTELS AND CLINICS/HOSPITALS NON-REIMBURSABLE TECHNICAL COOPERATION (CO-T1332)

Financial Terms and Conditions			
<b>Borrower:</b> Bancoldex		<b>Maturity:</b>	20 years
<b>Guarantor:</b> Republic of Colombia		<b>Amortization Period:</b>	10 years
<b>Executing Agency:</b> Bancóldex		<b>Grace Period:</b>	10 years
<b>Source</b>	<b>Amount (US\$)</b>	<b>Disbursement Period:</b>	48 months
<b>IDB – Clean Technology Fund Trust Fund (CTF)</b> <sup>1,2</sup>	10 million	<b>Interest Rate:</b>	0.75% Fixed
		<b>Administration Fee:</b>	0.45%, one time
<b>Total</b>	<b>10 million</b>	<b>Currency of Approval:</b>	US\$ chargeable to CTF Trust Fund
<b>IDB-CTF –Non-reimbursable Technical Cooperation</b>	750,000		
Project at a Glance			
<p><b>Project Objective/Description:</b> The program’s goal is to support Colombia’s efforts to enhance the competitiveness of the hotel and clinic/hospital sub-sectors, while reducing GHG emissions, through the piloting of an innovative financing model for EE projects. The proposed loan’s objective would be to increase EE investments in hotels and clinics/hospitals. To achieve that objective, a complementary TC (CO-T1332) will help to build up the awareness and capacities of Bancóldex, LFI and other relevant market actors on the structuring, financing, monitoring and evaluation of competitiveness-enhancing, EE projects (see ¶1.27). The proposed loan will be complemented with resources from CO-L1132. (See Footnote 2 below).</p> <p>This program is part of a multi-pronged approach agreed by the Government of Colombia and the CTF to help the country achieve over the long term a low carbon growth path.</p> <p><b>Related operations:</b> This project is closely related to a technical cooperation (TC) that supports Bancóldex in the detailed design of the financing line and the proposed innovative financing model (CO-T1328). The complementary TC proposed with this loan will support market development efforts and program execution (CO-T1332). See Annex V details.</p> <p><b>Special contractual clauses:</b> As a condition prior to the first disbursement, the Executing Agency will provide evidence, to the Bank’s satisfaction, of: (i) the formal designation of a Program Coordinator; (ii) the entry into effect of the Operational Regulations agreed with the Bank; and (iii) a plan of investment for the first 180 days of the Program (see ¶3.3).</p> <p><b>Exceptions to Bank policies:</b> A partial waiver to Bank’s policy on guarantees required from borrowers (OP-303) is required such that the Republic of Colombia will only guarantee the financial obligations derived from the Loan Contract.</p>			
<p><b>The Project qualifies for:</b>    SEQ <input type="checkbox"/>            PTI <input type="checkbox"/>            Sector <input type="checkbox"/>    Geographic <input type="checkbox"/>    Headcount <input type="checkbox"/></p>			

(1) According to document GN-2571 “Proposal for the establishment of the Clean Technology Fund (CTF) in the Inter-American Development Bank”

(2) The financing of energy efficiency (EE) individual investment projects to be funded with program resources will be complemented with the financing of similar investment projects to be funded with resources (for up to US\$10 million) of an existing CCLIP (CO-X1007). The third loan operation under the CCLIP (CO-L1132, US\$125 million), in the Bank’s pipeline for 2013, has as its objective the strengthening of the competitiveness of eligible firms through the financing of investment projects for: (i) innovation and technological development; and (ii) the mitigation and control of environmental impacts.

## I. DESCRIPTION AND RESULTS MONITORING

### A. Background

- 1.1 **Correlation between competitiveness, growth and GHG emissions.** The current (consumption-driven) economic model coupled with a rising population has brought about increasing pressure on natural resources and undesirable environmental consequences of human activity, such as pollution. Available data suggests that there may be a positive relationship between a country's competitiveness<sup>1</sup> and the degradation of its environment. Figure 1 illustrates such relationship for 61 countries, based on 2009 data. On the basis of this type of evidence, the protection of the environment and economic growth are often seen as competing aims. Industries, for instance, often claim that tightened environmental regulations or ambitious environmental commitments hamper their growth, undermining their competitiveness.
- 1.2 However, as Porter and van der Linde<sup>2</sup> argue, the environment-competitiveness tradeoff has been framed incorrectly. This struggle between ecology and the economy grows out of a static view in which technology, products, processes and customer needs are all fixed. Under this view, once firms have made their cost minimizing choices, pursuing environmental objectives inevitable raises costs and may reduce their market shares. In a more dynamic view, innovation-based solutions could promote both competitiveness and environmentalism.
- 1.3 In Colombia, like in many other countries, there seems to be a positive relation between competitiveness and per capita Carbon Dioxide (CO<sub>2</sub>) emissions. Figure 2 illustrates the evolution of both variables, suggesting that recent increases in competitiveness have been accompanied with higher per capita CO<sub>2</sub> emissions.

Figure 1

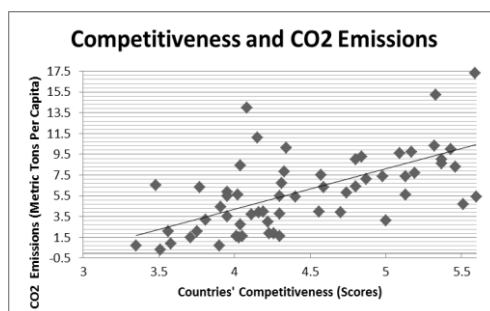
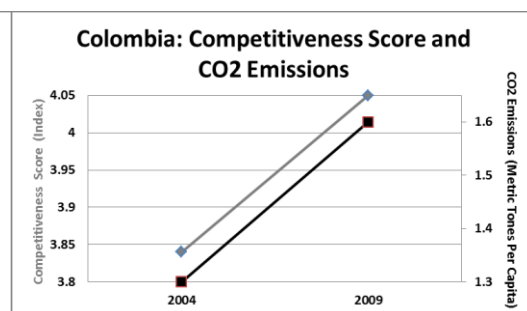


Figure 2



Source: Global Competitiveness Index, 2009-2010 and World Bank CO<sub>2</sub> Emissions Table

<sup>1</sup> Competitiveness at the country level arises from the set of institutions, policies, and factors that determine an economy as one that is likely to maintain growth due to the high rates of return obtained from investments. At the industry level, it arises from superior productivity; either in terms of lower costs than rivals or the ability to offer products with superior value that justifies a premium price. See Op. Cit 2.

<sup>2</sup> Michael E Porter and Claas van der Linde (1995) *Towards a New Conception of the Environment-Competitiveness Relationship*. *Journal of Economic Perspectives*, Volume 9, Number 4.

- 1.4 **Government policies to promote sustainable competitiveness and growth.** To enhance the economy's growth prospects over the medium to long-term, the government has adopted a series of measures, through its National Policy for Competitiveness and Productivity (NPCP<sup>3</sup>), which seek to enhance the competitiveness of sectors with a high potential for growth, such as tourism, energy and agriculture, in order to attract new investments, compete in global markets, generate formal employment and combat poverty and inequality. The NPCP also contemplates the strategic articulation of environmental issues as critical factors to enhance the country's competitiveness.
- 1.5 The government has also launched a public-private-supported Low-Carbon Development National Strategy (LCDNS),<sup>4</sup> that seeks to identify the country's Green House Gases (GHG) mitigation potential and the appropriate GHG mitigation measures and projects that should be undertaken by productive sectors without compromising the long-term growth prospects of the economy. The challenge of the LCDNS is to find, through the implementation of the productive sectors' competitiveness plans, alternatives to avoid a rapid growth of GHG emissions taking advantage of the support of international climate finance, public and private sector finance and carbon markets.
- 1.6 **Colombian GHG emission reduction and EE: priorities and opportunities.** The electricity sector accounts for 15% of the country's energy mix.<sup>5</sup> Although the sector is relatively clean in terms of GHG emissions,<sup>6</sup> two important dynamic considerations explain the government's increasing interest in promoting end-use EE and/or low-carbon electricity generation (EG) investments. First, the country is expected to continue to grow robustly in the coming years due to the dynamism of its oil and mining sectors, which may demand new generation capacity that could very likely come from fossil-fuel power sources, particularly coal. Second, in the context of climate change, the supply of hydropower could become more vulnerable to water shortages due to more frequent and intense *El Niño* events, exacerbating the need for new power plants with higher carbon intensities. In the absence of sustained efforts to promote end-use EE investments and/or low-carbon EG that can defer or substitute new investments in coal-fired electricity generation, the country's future electricity supply could be characterized by a higher carbon footprint than in the recent past.
- 1.7 Facing these energy challenges, the government has demonstrated in recent years its commitment at reducing the energy intensity of its economy through a variety of policy and regulatory measures that seek to create an enabling environment for EE. These include: (i) creating a legal framework for EE and

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<sup>3</sup> See Colombia Policy Document ([CONPES 3527](#)) of 2008 on Competitiveness and Productivity.

<sup>4</sup> See Colombia Policy Document ([CONPES 3700](#)) of 2011 on Institutional Coordination Strategy for Policy and Actions in Climate Change.

<sup>5</sup> Other sources of energy in the country's mix include: Oil and oil products, 45% of final energy consumption (mostly for the transport sector); natural gas 19% (mostly for the industrial sector); bio-energy 16% (mostly for the residential, industrial, and transport sectors); and coal and coke the remaining 5%. (UPME, [Energy balances](#)).

<sup>6</sup> During the last decade an average of 78% of the electricity generated in the country was based on hydropower. See ([XM – Expertos en Mercados](#)).

standard setting mechanisms; (ii) establishing a national EE commission; (iii) directing the energy regulator to set efficiency standards for appliances and systems; (iv) carrying out extensive studies on carbon abatement and a national plan for EE; (v) encouraging distribution companies to promote EE investments; and (vi) granting tax incentives for such investments. Furthermore, the National Energy Plan 2006-25, establishes guidelines for energy policy with a long-term vision to ensure energy supplies, including a program for the Rational and Efficient Use of Energy and Other Forms of Non-conventional Energy (PROURE). More recently, though Resolution 180919 of June 01, 2010, the Ministry of Mines and Energy adopted an Indicative Plan of Action 2010-15 to implement the PROURE program.

- 1.8 The CTF approved in 2010 an Investment Plan (IP) for Colombia,<sup>7</sup> which outlines the strategy, sectors, and objectives to be implemented by the Bank, the World Bank and the International Finance Corporation (IFC) in leveraging additional resources to support GHG mitigation measures. Given the government's interest in promoting end-use EE measures, the IP for Colombia includes US\$50 million of concessional CTF resources for EE, of which US\$10 million are to be intermediated by Bancóldex through the proposed program. Overall, it is expected that the CTF's IP's EE program would save over 31.9 Mt CO<sub>2</sub>e over a 20 year period, out of a potential of at least 67.1 Mt CO<sub>2</sub>e in its targeted sectors, and with a total program cost of US\$670 million, leveraging US\$50 million of CTF funding.
- 1.9 **Increased energy efficiency as a driver for growth, competitiveness and inclusive, sustainable development in the hotel and clinics/hospitals sub-sectors.** While the CTF's IP for Colombia has identified the existence of significant opportunities for scaling-up implementation of EE technologies in electricity and thermal end-uses across all sectors of the economy, the Government of Colombia selected to concentrate the proposed program on hotels and clinics/hospitals for a number of reasons: (i) their economic and social importance both at the national and regional levels, as reflected in the 2010-2014 National Development Plan (NDP) and the National Plan for Productive Transformation (NPPT); (ii) GHG emissions reductions in these sub-sectors, though relatively smaller than in other sectors, can be achieved more cost-effectively because they confront higher energy prices than industry,<sup>8</sup> for instance, and numerous firms are operating with energy-inefficient technologies; (iii) their relatively easier implementation potential, as it would involve EE measures for buildings<sup>9</sup> based on

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<sup>7</sup> [Clean Technology Fund Investment Plan for Colombia](#), Climate Investment Funds, April 12, 2010.

<sup>8</sup> Hotels and clinics/hospitals are considered to be regulated clients in Colombia's electricity and natural gas markets (See: [www.creg.gov.co](http://www.creg.gov.co)). This means that the prices that they need to pay per unit of energy (electricity or gas) are higher than those paid by firms in the industrial sector. This is particularly true in the northern coast of the country, where most tourism hotels are concentrated. In this area, a 200-room hotel pays between US\$500,000 and US\$1 million per year for its electricity and natural gas consumption.

<sup>9</sup> Supporting the demand for financing of EE projects in sectors where the required technological change entails the replacement of easily replicable technologies (air conditioners, boilers, solar water heaters, cogeneration units, and lighting) is much easier than in other productive settings that depend on technological solutions that have to be tailor-made to specific plant configurations.

technologies which are well known and readily available in the market; (iv) given the program's limited amount of resources, a more powerful demonstration and transformational effect could be achieved in the market if they are geared to sub-sectors where the individual cost of introducing EE measures is relatively low; (v) the proposed financing model, i.e. supporting both the supply of and the demand for financing for EE projects, could have powerful demonstration and replication effects not only in those sub-sectors, but also in the rest of the services sector;<sup>10</sup> and (vi) based on recent studies and consultations with Bancóldex and LFIs, it was determined that those sub-sectors are well organized at the national and regional levels through associations, which facilitates the dissemination of knowledge and the implementation of strategies to stimulate the demand for EE financing and the scaling up of the program.

- 1.10 **The hotel sub-sector in Colombia.**<sup>11</sup> The sector has some 6,000 firms,<sup>12</sup> most of which are small and medium size firms operating with obsolete, energy-inefficient technologies. Furthermore, the sector employs around 128,000 people, of which 83,200 (65%) are women.<sup>13</sup> Given the strong dynamism of the Colombian economy in recent years, the hotel sub-sector has been growing at a very rapid pace.<sup>14</sup> This strong growth in the sector is likely to continue going forward amid the country's favorable economic prospects.<sup>15</sup> This trend is expected to increase the sub-sector's energy use and GHG emissions unless new EE standards are established for new facilities and more EE technologies are adopted by most of the old ones.
- 1.11 An important development in the sector is the arrival of large foreign hotel chains into the domestic market. Since the facilities of these new entrants are incorporating modern EE technologies, they are likely to exert powerful competitive pressures on smaller and older hotels which have larger operational costs per unit of output, thus running the risk to be gradually displaced from the market, with the resulting adverse impact on employment and income generation, particularly for women.<sup>16</sup> It is estimated that the energy savings and GHG emissions reductions potential in this sector are

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<sup>10</sup> According to the [World Economic Forum 2013 Competitiveness Report](#), the value added of the services sector as percentage of GDP is 61%, compared to 7% in agriculture, 13.5% in manufacturing and 18.5 in non-manufacturing industry.

<sup>11</sup> For an analysis on the recent performance and outlook of the sector see Jorge Humberto Botero's "Estudio de Prospectiva para la Industria de la Hotelería", Fedesarrollo, September 2010.

<sup>12</sup> Around 1,600 of them are members of the National Association of Hotels (see [Cotelco: Asociación Hotelera y Turística de Colombia](#)).

<sup>13</sup> See [Redatam+SP - CEPAL/CELADE](#).

<sup>14</sup> In 2000-10, the GDP of the hotel and restaurant sub-sectors grew 62% in real terms. See *Producto Interno Bruto a Precios Constantes Grandes Ramas de la Actividad Económica* – Banco de la República.

<sup>15</sup> See Proexport, [Colombia, 10 razones para invertir en infraestructura hotelera en Colombia](#) and Jorge Botero's "Estudio de Prospectiva para la Industria de la Hotelería", Fedesarrollo, September 2010.

<sup>16</sup> According to [ECLAC statistics](#), generated with data from the 2010 Household Survey, the incidence of poverty in Colombia is greater for women than for men.



992.4 GWh/year and 191,530 TCO<sub>2</sub>e/year, respectively<sup>17</sup>, equivalent to a 19% average reduction in energy costs.

- 1.12 **The clinics/hospitals sub-sector.** According to available information, the sector has some 9,605 private health institutions authorized by the Ministry of Health,<sup>18</sup> which like in the case of hotels, have been operating with outdated, energy-inefficient technologies. Total employment in the sector amounted to 92,256 people, of which 65,561 were women (or 71% of that total).<sup>19</sup>
- 1.13 This sub-sector has also been growing at a very rapid pace in recent years. Between 2000 and 2010, it grew by 66% in real terms. Besides increasing government spending in the sector, an important factor responsible for this growth, from the private sector side of the market, is an increasing expansion in the exports of health services.
- 1.14 Given these growth trends, and the government's efforts to attract new investments into the health tourism sector, it is likely that the sub-sector will expand even further in the future, increasing its energy demand and GHG emissions unless new EE standards are established for new facilities and more EE technologies are adopted by the old ones.
- 1.15 As new, modern facilities enter into the market, they will exert strong competitive pressures on older ones. One effective strategy to counteract these pressures, and improve the quantity and quality of services, while reducing GHG emissions, is to improve their energy efficiency, and hence reduce their operational costs. It is estimated that the energy savings and GHG emission reductions potential in this sector are 455 GWh/year and 158,901 TCO<sub>2</sub>e/year, respectively,<sup>20</sup> equivalent to a 9.6% average reduction in energy costs.
- 1.16 **The challenge of financing EE investment projects in Colombia.** As highlighted in the CTF' IP for Colombia, there is a dearth of domestic EE financing availability in Colombia due to a number of interrelated financial and knowledge barriers. LFI's lack expertise and capacity on how to market, analyze and structure EE deals, and are uncertain about their returns and risks.
- 1.17 In addition, the supply of credit to the private sector is very low (36% of GDP in 2011, lower than that of comparable economies in the region) and most of that credit is of relatively short maturities<sup>21</sup> due to the fact that LFI's deposits are concentrated in very short-term instruments. Indeed, by November 2012, 71.2% of their deposits were of less than one year, with 63.5% of less than 180

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<sup>17</sup> If the technology improvements proposed by this program (see ¶2.4a) were adopted in 90 hotels, the potential average of energy savings and associated GHG emissions over a ten year period would be 51.1 GWh/year and 9,858 TCO<sub>2</sub>e/year, respectively.

<sup>18</sup> See: Statistics provided by DANE using the [MSPS \(Ministerio de Salud y la Protección Social\) database](#) in November 2012.

<sup>19</sup> See: Statistics provided by DANE using the "[Encuesta Anual de Servicios-EAS](#)" or Services Annual Survey of 2009.

<sup>20</sup> If the technology improvements proposed by this program (see ¶2.4a) were adopted in about 34 clinics/hospitals, the potential average of energy savings and associated GHG emissions reductions over a ten year period would be 11.78 GWh/year and 4,120 TCO<sub>2</sub>e/year.

<sup>21</sup> Average loan maturity in the system is around two years according to evidence from Bancoldex

days. Credit access does not affect all firms equally. Micro-, small- and medium-sized enterprises (MSMEs) have traditionally had limited access to financing,<sup>22</sup> especially medium- and long-term financing.

- 1.18 On the demand side, end-users lack knowledge of the economic benefits of energy efficient equipment and perceive that EE investments have a high opportunity cost. There is also a lack of technical service providers that could support the adoption and financing of EE measures.
- 1.19 In this context, the CTF's IP for Colombia prioritizes a series of activities to address those barriers, including: (i) guarantees to mitigate the perceived risks regarding EE projects until a track record is developed; (ii) the combination of technical assistance and lending, through LFIs, to catalyze the financing of EE investments; (iii) training technical service providers and LFIs on how to market, analyze, structure, monitor and evaluate EE projects; and (iv) educating energy end-users on the savings achieved through technology improvements, and the payoffs of making the high initial investments.<sup>23</sup>

## **B. The problems and their factors**

- 1.20 There are two main problems addressed by the program. First, the positive correlation between competitiveness and environmental degradation. The main factor driving this issue is the need to expand coal-fueled electricity generation to meet a growing energy demand. As explained in ¶1.4 to ¶1.8, while the Colombian government prioritizes both enhanced competitiveness and environmental sustainability, the country is expected to continue to grow robustly in coming years, which may demand new generation capacity from fossil-fuel power sources, increasing GHG emissions. EE investments are seen as an important strategy for sustainable growth.
- 1.21 The second problem is the lack of investment in EE projects. The three main factors driving this issue are the following. First, lack of adequate investment financing for EE investment projects. As mentioned before, LFIs lack capacity to market, analyze and structure EE deals, and are uncertain about their returns and losses. LFIs tend to apply a traditional “asset-based” lending approach when they finance these projects and are not willing to rely upon the cash flows generated by EE investment projects as a basis for loan repayments. In addition, restricted access by firms, particularly SMEs, to investment financing at adequate rates and maturities limits their interest in investing, as they may not have enough cash to cover the high initial costs of their projects. Moreover, the higher costs of cleaner technologies relative to that of traditional ones may exacerbate further the pressure on firms' cash flows, discouraging the undertaking of this kind of investments.
- 1.22 Second, the firms' knowledge gap on energy efficient technology. On the knowledge front, most relevant market players confront information and

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<sup>22</sup> See Luis Alberto Zuleta J., “*Política Pública e Instrumentos de Financiamiento a las Pymes en Colombia*” in *Eliminando Barreras: El Financiamiento a las Pymes en América Latina*, Carlos Ferraro (ed.), Chapter II, ECLAC, November 2011.

<sup>23</sup> See in particular ¶71-72 and ¶76-77 of the CTF's Investment Plan for Colombia.

knowledge gaps. First, firms lack knowledge on the economic benefits of more efficient equipment and processes, becoming a major barrier on the demand side of the market. While firms' owners and managers may understand conceptually that more efficient equipment can save them money, they do not know the scale of those savings, the costs and returns of EE measures, and how to analyze, structure, implement and monitor technically-robust and financially-viable EE projects. Furthermore, when choosing amongst alternative capital investments, they may prefer to invest in lower return projects, whose benefits appear to be greater in the short term.

- 1.23 And third, the lack of financial capacity of local technical service providers. Although technical service providers are knowledgeable on alternative technologies and on how to structure technically-robust EE projects, they have: (i) lack of knowledge on their financial aspects; (ii) limited capacity to accurately measure their energy savings; and (iii) a small capital base to invest directly in technologies (as is done in other countries under the Energy Services Companies – ESCOs - model).

### C. Justification

- 1.24 In order to address the problems identified above, the proposed program will offer an integrated approach, based on financing and technical assistance, to address existing barriers that limit the supply of and the demand for investment financing for EE projects. The services sector accounts for the largest share of GDP in Colombia, and within this sector the government prioritized the hotel and clinic/hospital sub-sectors due to: (i) their economic and social importance at the national and regional levels; and (ii) their potential to demonstrate the benefits of both EE technologies and the proposed integrated financing model not only in those sub-sectors but also in all of the services sector. The program is aligned with Colombia's national policies and development plan.

- 1.25 **The country's sector strategy.** The 2010-2014 NDP "Prosperity for All"<sup>24</sup> highlights the importance of promoting productivity and competitiveness of its productive sectors, stressing the role of MSMES. The NDP section on Sustainable Growth and Competitiveness identifies the tourism sector (and in particular hotels and health tourism) as a priority sector. Both the NDP<sup>25</sup> and the government's "Institutional Strategy for the Articulation of Policies and Actions Plans on Climate Change"<sup>26</sup> acknowledge the challenge to achieve the unprecedented growth and productivity goals of the NDP in a sustainable manner and highlight the importance to promote EE measures. The proposed program is aligned with both plans as it seeks to support strategic services sub-sectors in accessing finance to implement EE measures that enhance their

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<sup>24</sup> See the references on the importance of supporting MSMES development and the health tourism in the chapter on [Sustainable Growth and Competitiveness](#) as well as hotels in the section on tourism as a driver for regional development.

<sup>25</sup> In particular section D. 2 of the Plan's chapter on [Environmental Sustainability and Risk Prevention](#) refers to reinforce the goals of the PROURE and the importance of promoting energy efficiency technologies in various sectors of the economy, including the services sector.

<sup>26</sup> [CONPES 3700, 2011](#).

competitiveness while promoting GHG emissions reductions. Finally, the program supports the implementation of Colombia's LCDS and hence its image as a progressive, carbon efficient country.

- 1.26 **Alignment with other IDB/CTF operations in Colombia.** The program will be coordinated with ongoing activities and projects with Bancoldex, including a loan operation in preparation CO-L1132, and a CTF-funded TC for US\$250,000 to support the detailed design of the financing line and of an innovative financing model for EE projects (CO-T1328). The program will also be coordinated with other IDB/CTF programs that support EE such as a Non-Sovereign Guarantee Green Guarantee Mechanism for Bancolombia (CO-L1104). The program is expected to overcome existing market barriers and to provide important lessons for future programs within the EE program of the CTF's IP for Colombia, which is currently under review by the government and will be presented to the CTF Committee by midyear.

**D. Objective, components and characteristics**

- 1.27 The program's goal is to support Colombia's efforts to enhance the competitiveness of the hotel and clinic/hospital sub-sectors, while reducing GHG emissions, through the piloting of an innovative financing model for EE projects. The proposed loan's objective would be to increase EE investments in hotels and clinics/hospitals. To achieve that objective, a complementary TC (CO-T1332) will help to build up the awareness and capacities of Bancóldex, LFIs and other relevant market actors on the structuring, financing, monitoring and evaluation of competitiveness-enhancing, EE projects. In short, the funding provided under the loan would be combined with technical assistance activities to support the development of the market for EE investments and financing.
- 1.28 The program will have one component: US\$10 million in CTF funding for a credit line to finance EE projects of eligible firms. The financing of EE individual investment projects to be funded with program resources will be complemented with the financing of similar investment projects to be funded with resources (for up to US\$10 million) of an operation in preparation. See ¶2.1. The credit line will be provided by Bancóldex to eligible LFIs so that they, in turn, can offer sub-loans at adequate terms and conditions to eligible hotels and clinics/hospital for the financing of eligible EE investment projects. CTF funds will be provided to Bancóldex as a loan in US Dollars.
- 1.29 The financing provided under the program will also be complemented with non-financial activities, to be funded by a US\$750,000 CTF, non-reimbursable TC (CO-T1332) to support required market structuring and capacity building efforts as well as program execution. Among other things, the TC will finance activities aimed at:
- a. Stimulating the demand for financing by eligible firms (hotels, clinics and hospitals) and support the preparation, through technical services providers, of technically robust, bankable projects that can be monitored for results. The technical backstopping for the preparation and implementation of projects would be financed by the program;

- b. Support Bancoldex in designing a concessional credit line to address the specific costs, returns and payback periods of EE projects;
- c. Develop and implement risk management tools such as performance insurance policies, performance-based payment systems for technical services providers, and technical verification standards and processes that engage eligible beneficiaries and LFIs in undertaking and financing, respectively, EE investment projects.

**E. Key results indicators**

- 1.30 The main outcomes of the program would be the percentage reductions in energy costs and GHG emissions of beneficiary firms relative to that of comparable, non-beneficiary firms. The intermediate outcomes of the program would be the percentage reduction in energy costs and GHG emissions<sup>27</sup> of beneficiary firms during program execution. The outputs would be: (i) an increase in the number of hotels that gain access to investment finance for EE projects; (ii) an increase in the number of clinics/hospitals that gain access to investment finance for EE projects; and (iii and iv) an increase in the annual dollar amount of medium-and long-term loans granted by the program to EE projects in hotels and clinics/hospitals, respectively.
- 1.31 It is expected that the market structuring efforts and risk mitigation tools to be piloted under the program could also result in increased market confidence on the services provided by technical services providers as well as in a lower perception of risk by LFIs and hotels and clinics/hospitals on EE projects, paving the way for future replication of the program by other firms in the same sub-sectors and other sectors.
- 1.32 Additionally, it is estimated that the project's benefits would extend far beyond environmental or economic gains. By lowering energy costs, resources can be re-invested in the business or invested elsewhere in the economy, resulting in more jobs. First, some jobs would be created for the manufacture and installation of new equipment, and in industries supplying the clean energy sector. Second, job expansion in beneficiary firms, where women are more represented, offers additional opportunities for gender-inclusiveness.

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<sup>27</sup> If the technology improvements proposed by this program (see ¶2.4a) were adopted in 90 hotels and 34 clinics/hospitals, as is expected, the potential average of energy savings and associated GHG emissions over a ten year period would be 62.8 GWh/year and 13,977 TCO<sub>2</sub>e, respectively. (See: Opt. Cit 27 and 31, E. Botero y D. Magallon, 2012).

## II. FINANCING STRUCTURE AND MAIN RISKS

### A. Financing instruments

#### 1. Origin and use of resources

- 2.1 This proposed program will be funded with US\$10 million from the Clean Technology Trust Fund. The financing of EE individual investment projects to be funded with program resources will be complemented with the financing of innovation and mitigation of environmental impacts projects to be funded with resources (for up to US\$10 million) of a new loan operation (CO-L1132).<sup>28</sup> The proposed program will also be complemented with a TC (CO-T1332) to be funded with non-reimbursable resources from the CTF.
- 2.2 Program resources will allow Bancóldex to provide financing to eligible LFIs, which, in turn, will be able to provide sub-loans on adequate terms to eligible hotels and clinics/hospitals for eligible EE investment projects. The program's conditions will be set out in its Operational Regulations (OR).
- 2.3 The financing provided under the program will have the following characteristics: (i) it will be in Colombian pesos; (ii) it will have variable rates, with a spread that will be lower than those of Bancoldex's traditional modernization lines, but higher than the average market rate (fixed-term deposit, DTF); (iii) Bancóldex will assume the risks of the LFIs; and (iv) the LFIs would assume the sub-borrower's project risks.
- 2.4 Bancóldex will provide financing to eligible LFIs on the following conditions:
- a. **Eligibility.** Investment projects of small- and medium-sized hotels and clinics/hospitals, as well as of a few large-sized ones, on eligible EE technologies, such as: Replacement of Air Conditioning Units, Air Conditioning Control Systems, Solar Systems for Hot Water, High Efficiency Boilers, Pool Acclimatization, and Co-generation.
  - b. **Financing.** On a demand basis, the program will finance eligible LFIs, for a maximum period of 8 years, a grace period of at most 12 months, and at a discount rate that will be lower than those of Bancoldex's traditional modernization lines, but higher than the market's average funding rate.
  - c. **Sub-loans characteristics.** These will: (i) be denominated in Colombian pesos; (ii) have an interest rate freely negotiated between final beneficiaries and LFIs, taking into account client and sub-project risks and the low discount rate offered by Bancóldex; (iii) have a maximum repayment period of 8 years and a grace period of at most 12 months; and (iv) be capped at a maximum amount to be set in the OR, though the possibility of co-financing from LFIs and beneficiaries will be allowed.

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<sup>28</sup> A third loan operation (CO-L1132, US\$125 million) currently under preparation under an existing CCLIP (CO-X1007) has as its objective the strengthening of the competitiveness of eligible firms through the financing of investment projects for: (i) innovation and technological development; and (ii) the mitigation of environmental impacts.

**Cost of the program and sources of financing (US\$ millions)**

<b>Investment component</b>	<b>CTF</b>	<b>BANCOLDEX/IDB</b>	<b>Total</b>
Credit	10	10	20
Percentage	50%	50%	100%

**B. Fiduciary risks**

2.5 The fiduciary risk in financial management is low.

**C. Environmental and social safeguard risks**

2.6 This operation is a financial intermediary operation. The substitution of old for new EE technologies will result in energy savings and hence will have a positive (if limited) impact on climate change by reducing GHG emissions. Furthermore, due to the nature of the investments to be financed and its main beneficiaries, mostly SMEs, additional negative environmental and social impacts from the facilities themselves are not foreseen. However, this type of projects could have adverse impacts on the environment if replaced units are not withdrawn from circulation and properly disposed. To mitigate this risk, an Equipment Decommissioning and Disposal Protocol will be part of the program's OR to identify the potential environmental and social risks associated with the EE technologies eligible under the program, and to ensure that LFIs and the sub-loan beneficiaries implement the Protocol and any other mitigation measure applicable in accordance with Bancoldex's own Environmental and Social Risk standards.

**D. Development and public management/governability risks**

2.7 The program confronts two important development risks for which appropriate mitigation measures have been devised. They are: (i) a potential lack of demand for financing of EE projects by beneficiary firms; and (ii) Bancoldex's difficulty to lend loan proceeds in US\$ in the local financial market so as to generate the return in *Pesos* that would be required to support the program's concessionality. In addition, the Program confronts a public management/governability risk if Bancoldex loose or reduce its interest or commitment to the program due to operational difficulties or high transactions costs. The program contemplates measures to mitigate all the identified risks.

**III. IMPLEMENTATION AND MANAGEMENT PLAN**

**A. Summary of implementation arrangements**

3.1 **Borrower, Executing Agency (EA) and guarantor.** The borrower and EA will be Bancóldex, with the guarantee of the Republic of Colombia. Bancóldex has the necessary fiduciary and operational capacity for the successful execution of the program, as it is governed by the Financial System Act and is subject to oversight and monitoring by the Superintendence of Finance. Also, it operates as a second-tier bank that uses a network of LFIs. Bancóldex has a long track record implementing IDB operations, and the government has chosen it as one of the entities that will support its GHG

emissions reduction efforts. Bancóldex is a solvent institution with exemplary risk management practices.

- 3.2 Execution and Administration. For the purposes of this program, Bancóldex will be responsible for: (i) executing and supervising the appropriate use of the loan resources obtained through the proposed program; (ii) providing in due time and form the necessary human, technological, and budgetary resources; and (iii) delivering to the Bank the required documentation to comply with the disbursement and other operating conditions required for execution.
- 3.3 As a condition prior to first disbursement, the EA will provide evidence, to the Bank's satisfaction, of: (i) the formal designation of a Program Coordinator; (ii) the entry into effect of the OR agreed with the Bank; and (iii) a plan of investments for the first 180 days of the Program.
- 3.4 The provisions governing program execution, financial intermediaries' participation, and eligibility of sub-loans will be established in the OR, in accordance with Bancóldex and Bank policies, Colombian laws, and practices in Colombia's financial industry. The OR will: (i) reflect program characteristics; (ii) stipulate that non-compliance with its provisions will bar access to it; and (iii) require the Bank's no objection for future revisions.
- 3.5 LFI's subject to oversight and monitoring by the Superintendence of Finance will be eligible to participate in the program. They will be responsible for: (i) evaluating sub-borrower risk and making lending decisions in line with the OR and Bancóldex's operating regulations; and (ii) assuming responsibility *vis-à-vis* Bancóldex for the servicing and repayment of sub-loans, regardless of whether sub-borrowers meet their obligations.
- 3.6 No procurement actions or consultant services are contemplated for the proposed loan, since sub-borrowers will use market procurement practices.
- 3.7 Project resources are to be fully committed within 4 years running from the effective date of the loan agreement. Bancóldex commits to a maximum investment period of 8 years, i.e. should an outstanding sub-loan be prepaid within that period, Bancóldex will reinvest the proceeds in technological development and mitigation of environmental impact projects eligible under loan CO-L1132. Likewise, sub-loans amortizations will be used to repay the loan or to invest them in technological development and mitigation of environmental impact projects eligible under the aforementioned loan.
- 3.8 Disbursements shall be made through advances. Given the operation's characteristics, the loan will be disbursed based on demand, whose structuring will begin in the first year of execution. Bank's disbursements will be based on the value of the structured demand received from Bancoldex. Such demand will be demonstrated by presenting evidence on the approval of eligible sub-projects by a technical validator to be hired with funds from CO-T1332.
- 3.9 Financial statements and the eligibility of project expenses shall be audited annually by an independent audit firm acceptable to the Bank hired and paid by Bancoldex. The firm will report on the eligibility of program expenses,



verify the existence of endorsed notes to Bancoldex, and perform physical inspections to projects financed with loan resources to verify implementation of EE investments. The program's audited financial statements will be sent to the Bank no later than four months after the close of the EA fiscal year following procedures and terms of reference previously agreed with the Bank.

**B. Summary of arrangements for monitoring results**

- 3.10 **Reports.** The program will be monitored through semiannual reports prepared by the EA and presented to the Bank within 60 days after the close of each 6 month period, measuring progress on the results indicators and on the fulfillment of the eligibility criteria at project and program levels.
- 3.11 **Evaluation.** The borrower and the Bank will conduct a midterm evaluation within 24 months from the date of the first disbursement or once 50% of the loan has been committed, whichever occurs first. The evaluation will assess progress in accomplishing program objectives and outcomes based on the Results Framework in order to identify any corrective action required. The borrower will provide the information necessary for the Bank to conduct a Project Completion Report (PCR), to be carried out 6 months after the end of the execution period. Periodical monitoring meetings are also scheduled. The program contemplates an impact evaluation.
- 3.12 **Information.** Bancóldex will compile and maintain all information, indicators and parameters, including all documentation required to prepare the PCR and any *ex-post* assessment the Bank or the CTF may wish to conduct.

## **Characteristics of the Program**

Colombia would benefit significantly from increased energy efficiency – but the market is currently underserved. The market studies on energy efficiency barriers undertaken during the preparation of this operation identified that one of the most important barriers for financing technologies was the lack of trust: by potential beneficiaries. They did not believe that EE investments would actually result in enough energy savings so as to repay the initial investment in a reasonable period of time.

Local Financial Institutions (LFIs) also tend to apply a traditional “asset-based” lending approach when financing energy efficiency projects, limiting the loan amount to a maximum of 70%-80% of the value of assets financed (or collateral provided). Unfortunately, LFIs give little or no collateral value to EE equipment. Furthermore, even though there is significant value in the cash flow generated by energy efficiency investment projects to investing firms, most LFIs typically do not recognize and/or are not willing to rely upon that cash flow as a basis for those firms to repay their loans or increase their borrowing capacity. Furthermore, even if they would accept to consider such value, the incapacity to validate the risks involved in the generation of these positive cash flows would still refrain them from considering energy efficiency projects as financially viable business opportunities. Consequently, LFIs tend to assign little or no value to the cash flow generated by EE investment projects, and thus require firms to encumber their internal credit capacity to finance such projects.

The lack of understanding by clients and LFIs regarding the potential returns of energy savings, the high perceived risk of new more efficient technologies, and the need to secure external guarantees of a certain level of energy savings (mistrust in the performance of EE projects and EE audits) are actually typical barriers for investments in energy efficiency projects in many countries. In some countries, such as the United States of America, in order to address this barrier, these types of investments are directly undertaken by specialized Energy Service Companies (ESCOs) under a performance contract. The performance-based contracts are commonly used in the industry and recognized by the US government (not the case in Colombia).

ESCOs provide a wide variety of services such as: Identify and evaluate energy-saving opportunities; develop engineering designs and technical specifications; arrange external financing and/or provide financing themselves; provide monitoring and maintain the system to ensure energy savings during the payback period; The savings in energy costs are often used to pay back the capital investment of the project over a five- to ten-year period. If the project does not provide the projected returns on the investment, the ESCO is often responsible to pay the difference.

Colombia does not have an effective ESCO sector, and barriers currently exist to its development . Market studies have shown that while Colombia has many companies that can provide advisory services on energy efficiency, most of them do not have enough capital to invest directly in buying the technologies and taking the risks associated with EE projects. Only two companies were identified as “Energy Service Providers” (ESPs, i.e. companies that are directly investing in EE projects under performance contracts – and could be precursors to ESCOs in the future), but their capacity to expand their exposure in this type of projects is limited by their narrow capital base.

Given the impossibility to rely on the ESCO model in Colombia, the studies undertaken have shown that in order to promote energy efficiency investments in the country the following barriers / issues would need to be addressed:

- **Technical:** Clients and LFIs need to have independent assurances that the providers of technical services and technologies have the technical expertise and equipment’s, respectively, to support the structuring and implementation of successful energy efficiency projects, and are able to provide the warranties.
- **Legal:** The contractual arrangements between clients and service providers need to be transparent and standardized with regards to what type of services are provided, how service providers guarantee the performance of their EE projects, and what is the arbitration and remedies if promised savings do not materialize.
- **Insurance:** Clients need to be offered compensation / insurance schemes in case the promised financial flows (return on the investment) associated with energy savings do not occur.
- **Standards:** There also exists the need to have clear standards for monitoring and verifying energy savings, and a reliable system to carry out these two very important activities.

In order to promote an enabling environment that addresses the aforementioned issues and risk perceptions of potential beneficiaries and LFIs, the proposed program, through the coordinating efforts of Bancoldex, would provide the following incentives:

- Technical backstopping by energy services providers to beneficiary firms (which should be amortized through the credit line itself) in order to support ESPs to: i) estimate potential energy savings, ii) design eligible projects; iii) develop monitoring plans and iv) measure and report energy savings and greenhouse gas (GHG) emissions reductions achieved.
- Investment financing at terms and conditions that take into account the costs and returns of EE investment projects (which will be defined based on studies under way)
- Risk management tools through: i) a third party verifier that will assess both: a) the technical quality and expected results of project proposals made by technical services providers, and b) the technical expertise of those providers; and ii) the design of the

contractual arrangements required by a performance insurance policy to be developed by a local insurance company in order to insure firms investing in EE against shortfalls in agreed energy savings during the loan repayment period of their EE investment.

In addition to the concessionality of the credit line (particularly in terms of loan repayment periods), the program would fund, through a complementary technical cooperation, the following interventions that would support both the supply of and the demand for financing for EE investment projects:

- *Development of standard contractual terms that could fit in a recognized legal construction contract and which should establish the rights and obligations of both beneficiary firms and technical services providers, specifying, among other things, the project design and execution services that technical services providers would provide, the payment system and schedules, the arbitration and penalty systems that would be triggered if promised energy savings do not materialize, and the guarantees that technical service providers would have to extend to beneficiary firms to ensure that the latter are not financially affected if the EE project does not delivered the benefits that it is supposed to deliver. This intervention will include the discussions of the clauses and contract terms with the different stakeholders (clients, energy service providers, LFI, insurance company, third party verification organization, and Bancoldex), with the aim to develop a widely-accepted standardized contract. The contract will guarantee a reliable and fair agreement between the client and the Energy Service Provider, and this can help to create confidence among the partners. The contract has to be reviewed and endorsed by a recognized local legal expert before the discussions process. The standard contractual clauses will be made transparently available to any beneficiary firms and service providers that wish to participate in the program.*
- *Development of the methodologies, protocols and the system for monitoring, validation and verification of results (including monitoring the performance), by a third party to be hired by Bancoldex. Such independent third party would also assess the technical expertise of the technical services providers, the quality of the project proposals developed by them (including their technical design and their expected energy savings), and their project monitoring plans and performance reports. The third party will further assess with onsite visits whether projects have installed proposed equipment, have implemented monitoring requirements and have undertaken necessary measures to dispose and decommission the old equipment replaced.*
- *Development of a payment scheme for technical service providers that provides incentives for high quality support. Such scheme should contemplate: i) a partial payment when the technical and financial proposal is validated by an independent technical third party and the investment loan is granted to the beneficiary firm to cover investment costs; and ii) semi-annual or annual performance payments based on the achievement of the*

promised energy savings once the project starts its execution phase. The cost of the technical services would be financed by the credit line itself.

- *Development of an insurance policy to cover the risks associated to the technical services* to be provided by the technical services providers as well as other potential performance related issues. The performance insurance policy would be acquired and paid for by the technical services providers and the beneficiary would be the firms making the investment and assuming the loan for such investment. The policy would ensure that if the project does not achieve the level of energy savings promised at the beginning of the project, given an agreed level of activity, the beneficiary firm would receive a monetary compensation equivalent to the difference between the promised energy savings at the beginning of the period and the actual energy savings of any given period, multiplied by the agreed price of energy at the beginning of the execution of the project.
- *Design and implementation of a strategy to promote the program to potential beneficiary clients* (including the full technical design of some bankable project proposals to pilot the proposed financing scheme). This intervention will include the demonstration of the economic benefits of energy efficiency projects in market-representative hotels and hospital (SMEs). In order to develop this activity five energy audits will be funded with the aim to use the output information as awareness-raising material (this information is normally confidential, so the objective to pay for the EE audits is to own the data, and use it as a promotion material). A second goal of this phase is to use the energy audits as catalysts to implement the EE projects (demonstrative projects) for the LFI, Insurance, ESCO, and clients and engage them in executing the projects. The final objective of this intervention is to stimulate the demand (clients) to invest in EE projects, and as a learning process for the stakeholders.

The proposed scheme would initially be piloted in the hotel and clinics/hospital sub-sectors. These sub-sectors were selected to pilot the program's proposed financing strategy because GHG emissions reductions, though relatively smaller than in other sectors, could be achieved more cost-effectively and because they could have strong demonstration and replication effect not only in these sub-sectors but also in the services sector. Indeed, it is expected that if the program succeeds, the combination of adequate financial terms with risk mitigation instruments and technical support to support the development of the demand-side of the market could be replicated in other productive sectors. This would provide an alternative financing model to the ESCO model in a country where technical services provides operating under such scheme are practically inexistent. Finally other interventions envisaged to promote investment by private sector in energy efficiency measures in the Colombian Investment Plan are expected to complement this operation support expansion and further promotion of this model and capacity of energy services providers in Colombia.

A detailed description on how the two-phase financing scheme would operate is presented in what follows.

### ***Phase 1: Project validation and credit approval:***

*Step 1:* The service provider undertakes energy diagnostic to assess energy savings potential. If that potential is attractive, the energy services provider signs a contract with the client – based on the standard contract provided by Bancoldex.

*Step 2:* The technical service provider prepares a technical and financial project proposal, following a standard template provided by Bancoldex. The proposal will contain the potential energy savings and GHG emission reductions expected from the project.

*Step 3:* Based on the technical and financial project proposal, the beneficiary firm or the technical services provider on its behalf makes a credit/lease application in a LFI.

*Step 4:* After assessing and accepting to take the firm's risk and the project's financial risk, the LFI requests Bancoldex to assess, through an independent third party, the proposal's technical risk and the technical expertise of the technical services provider.

*Step 5:* Bancoldex remits the project proposal to a qualified external validator contracted by it to review the technical quality of the project proposal and the technical expertise of the technical service provider that prepare it. Based on a previously defined methodology developed for program, the validator makes a technical assessment if the proposed measures and technologies are appropriate and can generate the savings estimated by the technical services provider in his/her proposal. The validator will also assess whether the technical services provider has the necessary technical competencies to support the detailed design of the project and its subsequent implementation.

*Step 6:* The validator provides its assessment of the project proposal of the technical services provider to Bancoldex, and if the assessment is positive Bancoldex approves the funding for the project to the LFI.

*Step 7:* Based on the validation of the project proposal and of the technical services provider Bancoldex disburses the resources to the LFI.

*Step 8:* The commercial bank disburses the credit to the client. 6 months after disbursement the Third party validator / verifier will spot check

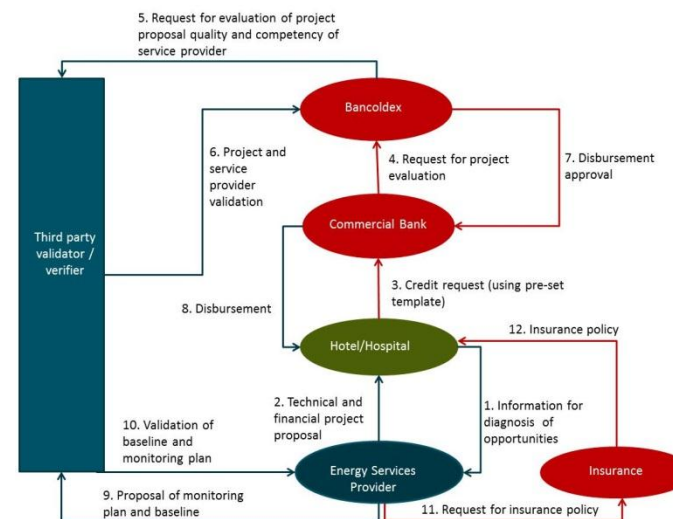
whether equipment has been installed, the monitoring plan and measures are correctly being put in place and the old equipment has been decommissioned. Failure by the client to address any of these issues would result in the obligation to return the credit to the LFI/ Bancoldex.

*Step 9:* The technical services provider develops and sends to the external validator contracted by Bancoldex the detailed design of the project operations and maintenance and prepares a monitoring plan that will include how the energy savings and GHG emissions reductions will be estimated, monitored and reported. At this point the technical services provider gets a partial payment from the beneficiary firm for the detailed design of the project. The remaining payments would be based on the project performance during the execution phase

*Step 10:* The validator reviews the monitoring plan and validates it.

*Step 11:* The technical services provider buys a performance insurance policy from a local insurance company to cover the risks associated with the technical performance of the project. The beneficiary is the firm making the investments and assuming the loan.

*Step 12:* The beneficiary firm receives a performance insurance policy to cover potential technical risks.



## Phase 2: Implementation, monitoring and reporting

*Step 1:* The technical services provider prepares periodic reports on the energy savings achieved by the project that are submitted to the beneficiary firm. The energy savings reports are the basis under which technical service providers would get paid by beneficiary firms during the execution phase.

*If the client agrees with the energy savings report received from the technical services provider:*

*Step 2:* The beneficiary firm pays the technical services providers a previously established percentage of his/her contract amounts.

*Step 3:* The beneficiary firm, or the technical services provider on his behalf, sends to Bancoldex the monitoring report (using a standard template). Reports should be sent at least once a year during the beneficiary firm's loan repayment period)

*Step 4:* Bancoldex maintains the reports in an electronic registry system that estimates the overall amount of energy savings and GHG emission reductions that are being achieved by individual projects. This registry will be used as the basis for the impact evaluation of the program.

*If the beneficiary firm does not agree with the energy savings report received from the technical services provider:*

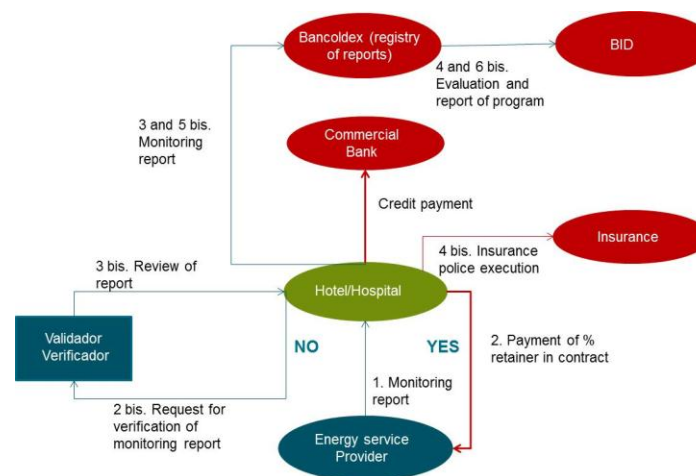
*Step 2 bis:* The beneficiary firm sends the report to an external verifier contracted by Bancoldex to review the monitoring reports.

*Step 3 bis:* The verifier assesses the energy savings report and determines the actual energy savings generated by the project.

*Step 4 bis:* In case the verifier assessment concludes that the energy savings were below those promised by the technical services provider to the beneficiary firm at the beginning of the project, the beneficiary firm does not pay the technical services provider the performance payment that he/she was scheduled to receive in that period. If such amount is not enough to cover the shortfall in energy savings, the beneficiary firm can make a claim on the performance insurance policy for the difference.

*Step 5 bis:* The client sends the final agreed monitoring report (with necessary revisions, if recommended by the verifier, and using a standard template) to Bancoldex. (Energy savings reports should be sent at least once a year)

*Step 6 bis:* Bancoldex maintains the reports in an electronic registry system that estimates the overall amount of energy savings and GHG emission reductions that are being achieved by individual projects. This registry will be used as the basis for the evaluation of the program.



**Colombia**  
**CTF/IDB Energy Efficiency Financing Program for the Services Sector**  
**CO-L1124**  
**Program Fit with CTF Investment Criteria**

**1. Program Fit with Colombia's Investment Plan.**

The Clean Technology Fund (CTF) is one of the two Climate Investment Funds (CIF), a collaborative effort among the Multilateral Development Banks (MDBs) and countries to bridge the financing and learning gap in preparation for a post-2012 global climate change agreement. Through the CTF, countries, the MDBs, and other partners agree upon country investment plans (IPs) to provide scaled-up financing for public and private sector projects that contribute to the demonstration, deployment, and transfer of low-carbon technologies with significant potential for greenhouse gas (GHG) emission reductions.

CTF financing is channeled through five MDBs: the World Bank, the IFC, ABD, AfDB and the IDB (which was designated Implementing Entity on June 8, 2010). The CTF is governed by a Trust-Fund Committee (TFC), with representatives of the donors and the recipient countries. The World Bank is the Trustee of the funds and hosts the administrative unit. Other MDBs participate in the governance of the funds through the MDB Committee.

In 2010, the Clean Technology Fund approved an Investment Plan (IP) for Colombia, which outlines the strategy, sectors, and objectives to be implemented by the IDB, the World Bank and the IFC in leveraging additional resources to support climate change mitigation measures. The IP for Colombia includes US\$50 million of concessional CTF resources for energy efficiency programs, of which US\$10 million are to be intermediated through Bancoldex.

Market studies<sup>1</sup> undertaken during the preparation of the program have confirmed the importance of promoting the interventions prioritized in the Colombian IP, as they have shown that the main barriers for investments in energy efficiency in Colombia relate to: (i) lack of capacity by LFIs to market, analyze and structure EE deals; (ii) lack of knowledge of these institutions on the risks and returns of these projects and on how to analyze them; (iii) lack of knowledge by potential beneficiaries (companies with high electricity bills) about the economic benefits of more efficient equipment and processes, resulting in low demand for EE investments in the market; and (iv) lack of financial capacity of local technical energy service providers (ESPs - these are firms or individuals which can analyze the energy consumption of beneficiary firms and suggest improvements in energy efficiency). Although technical service providers are knowledgeable on alternative technologies and on how to structure technically-robust EE projects, they have a small capital base to invest directly in technologies and take on the perceived risks up-front on behalf of beneficiaries and LFIs. In other countries, all of these functions are done together under the Energy Services Company model (ESCO).

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<sup>1</sup> Estudio de Mercado sobre el Potencial de Eficiencia Energética y Energías Renovables para Hospitales y Clínicas Privados, E. Botero y D. Magallon, 2012; and Estudio de Mercado sobre el Potencial de Eficiencia Energética y Energías Renovables para Hoteles, E. Botero y D. Magallon, 2012.



The overarching strategy of the CTF IP for the Colombian energy sector<sup>2</sup> seeks to: (i) establish guarantee schemes through which local financial institutions (LFIs) can mitigate the perceived risks regarding EE projects until the sector develops a track record; (ii) combine technical assistance and lending, through LFIs, to catalyze the financing of EE investments in priority sectors; (iii) train technical services providers as well as LFIs on how to market, analyze, structure and appropriately monitor and evaluate EE projects and deals; and (iv) educate energy end-users on the level of savings that could be achieved through technology improvements, and the payoffs of making the high initial equipment expenditures.

As explained in more detail in Characteristics of the Program, the program will offer an innovative financing model, based on the combination of financing,<sup>3</sup> technical assistance,<sup>4</sup> and risk transfer instruments, which will address barriers identified in market studies and in the energy efficiency strategic priorities of the CTF's IP for Colombian. More specifically, the aforementioned financing model will combine interventions such as:

- *Technical advice and support* from energy services providers to beneficiary firms (which should be amortized through the credit line itself) so that ESPs can: (i) estimate potential energy savings; (ii) design eligible projects; (iii) develop monitoring plans; and (iv) measure and report the energy savings and greenhouse gas (GHG) emission reductions achieved by financed projects.
- *Investment financing at terms and conditions* that take into account the costs and returns of EE investment projects (which will be determined based on studies currently underway);
- *Risk management tools* through: (i) a third-party validator and verifier that will audit and assess both: (a) the technical quality and expected results of project proposals made by technical services providers; and (b) the technical expertise of those providers; and (ii) the design of a performance insurance policy in conjunction with local insurance companies. Indeed, a local insurance company is expected to develop the contractual arrangements required to insure firms investing in EE measures against shortfalls in agreed energy savings during the loan repayment period of their EE investment.

It is expected that the model would be replicable in the same country in other sectors as well as in other countries.

## **2. Potential for GHG Emissions Savings.**

The proposed program will support the adoption by hotels, clinics and hospitals in Colombia of modern and highly energy-efficient EE technologies such as Air Conditioning Units, Air Conditioning Control Systems, Solar Systems for Hot Water, High Efficiency Boilers, Pool Acclimatization, and Cogeneration.

The selection of the hotel and clinic\hospital sub-sectors as the main beneficiaries of the project was due to the fact that the services sector accounts for the largest share of GDP in Colombia,

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<sup>2</sup> See in particular ¶71-72 and ¶76-77 of the CTF's Investment Plan for Colombia.

<sup>3</sup> See the full the Proposal for Operation Development for CO-L1124 - CTF/IDB Energy Efficiency Financing Program for the Services Sector (CO-L1124).

<sup>4</sup> See technical cooperation proposal CO-T1332 - Mitigation of GHG Emissions through EE in the Hotels and Clinic\Hospital Sub-Sectors: Objective and Components.

and within this sector the hotel and clinic/hospital sub-sectors are: (i) economically and socially important at the national and regional levels; (ii) provide for a cost effective avoidance of emissions; and (iii) have a larger potential to demonstrate the benefits of both EE technologies and of the proposed innovative financing model to the entire services sector.

Emissions reductions were estimated based on energy savings from specific scenarios of technological changes in hotels, hospitals and clinics in 3 different climate zones of Colombia<sup>5</sup>. The estimations considered both thermic and electric energy. The emission factors applied are detailed in the table below.

Energy	Emission Factor	Source
Electric energy from the interconnected grid 2011	0,102 Kg CO2/kWh	Based on information from XM
Displaced Electric energy by EE projects	0,28 Kg CO2/kWh	UPME
Natural gas	1,8 Kg CO2/Nm3	UPME

### Emissions Reduction Potential of Investment

It is expected that the program will directly benefit about 90 hotels and 34 clinics/hospitals, and hence result in direct energy savings and GHG emissions reductions for these beneficiaries of 62.8 gigawatt-hours per year (GWh/year – one gigawatt is 1,000 megawatts, MW) and 13,977 metric tons of carbon dioxide equivalent per year (tCO<sub>2</sub>e/year) and of 628.67 GWh and 139.773 tCO<sub>2</sub>e over 10 years (i.e. average lifetime of the promoted technologies). On average, these reductions are expected to result in reductions in energy costs of about 19% for hotels and of about 9.6% for clinics and hospitals.

The table below shows the potential of energy savings and GHG emissions by each client / project to be supported by the program (i.e. eligible hotels, hospitals and clinics).

Sector	Energy consumption reduction	GHG emissions reductions
	MWh/project/year	tCO <sub>2</sub> e/project/year
Hotels	568	110
Hospitals	347	121

### Technology Development Status

The technologies promoted under the program are commercially available and have a high potential for replication across not only the selected sub-sectors but other productive sectors in Colombia, having, hence, a significant potential to contribute to emissions reduction at the country level going forward. The table below shows the potential of GHG emissions reductions and energy consumption of each technology proposed per eligible project (i.e. for hotels, hospital and clinics).

<sup>5</sup> For details see Estudio de Mercado sobre el Potencial de Eficiencia Energética y Energías Renovables para Hospitales y Clínicas Privados, E. Botero y D. Magallon, 2012; and Estudio de Mercado sobre el Potencial de Eficiencia Energética y Energías Renovables para Hoteles, E. Botero y D. Magallon, 2012.

Technology	Description	Energy consumption reduction	GHG emissions reductions
		MWh/project/year	tCO <sub>2</sub> e/project/year
Air conditioning and refrigeration systems / units replacement	Substitution of old air-conditioning equipment with new energy efficient equipment that does not contain substances with high Ozone Depletion Potential (ODP)	37	66
Air Conditioning Control Systems	Installation of control systems to exiting air-condition systems that are operating with low levels of energy efficiency.	114	33
High Efficiency Boilers	Replacement of old furnace/ boiler / water heater systems with new equipment consuming less fuel and/or energy.	622	64
Solar Systems for Hot Water	Solar systems for hot water replacement or reduction, reducing the use of traditional water heating (such as gas or electric heaters).	236	45
Pool Acclimatization	Substitution of gas or electric resistance heating systems with solar heating system or heat pumps.	2,073	402
Co-generation	Installation of systems for electricity generation or heat recovery that reduce consumption of electricity and use of fossil fuels.	5,651	397

Notes: The potential energy savings and GHG emissions reductions were estimated as an average for typical size of investments and types of clients eligible under the program (hotels, hospitals and clinics). The potential of energy savings may vary according to the size of the installation (i.e. number of hotel rooms or beds in a hospital/clinic). The energy consumption may also be influenced by the climate zone where the hotels and hospitals are located. The reduction of energy consumption includes thermic and electric energy. The GHG emissions reductions depend on the emissions factors of electricity and gas.

While the selected technologies are commercially available in Colombia and are cost-effective, the market studies undertaken in preparation of this program showed that potential beneficiaries (hotels, hospitals, clinics) tend to perceive EE projects as less attractive than other investments. This occurs either because the energy savings are often not seen as investment returns, or because LFIs give little or no collateral value to EE equipment (reducing the ability to borrow against them). As a result, these investments are not considered attractive; other investments are considered of greater priority by these beneficiaries when considering modernizing or expanding their business (i.e. they may prefer to invest in other type of building renovations or new equipment or facilities). As mentioned above and as outlined in detail in the Characteristics of the Program, the proposed program aims at addressing these barriers by a combination of technical support and financing measures.

While this program focuses on the sub-sectors of hotels, hospitals and clinics, the technologies proposed could also be adopted by other productive sectors of the economy, many of which have potential to undertake EE measures for buildings. In fact, it is expected that the piloting of the program with hotels, hospitals and clinics could facilitate the replicability of this type of intervention. Starting to intervene in sectors which are amenable to the rapid and successful

implementation of energy efficiency measures can spread good practice to the overall market through their demonstration effects.

### **3. Cost Effectiveness**

Altogether, the unit abatement cost of the program is estimated at USD 143 per tCO<sub>2e</sub> (\$/tCO<sub>2e</sub>), considering a total financing of USD 20 million by the program and GHG emission reductions of 139.773 tCO<sub>2e</sub> for 10 years (or an investment of USD 71.5 of CTF resources per tCO<sub>2e</sub> reduced by the program).

The profitability of energy efficiency projects in the hotel, hospital and clinic sectors is rather similar to that of energy efficiency projects in the industrial sector, and in some cases it could be even higher taking into account the fact that hotels, hospitals and clinics pay higher energy prices in the domestic market than industrial customers. Hotels, hospitals and clinics are considered to be regulated clients in Colombia's electricity and natural gas markets. This means that their electricity and gas prices are higher per unit of output than those paid by firms in the industrial sector. This is particularly true on Colombia's northern coast, where most tourism hotels are concentrated. In this area, a 200-room hotel could pay between USD 500.000 and USD1 million per year for its electricity and natural gas consumption. So, the emissions reduction opportunities in the hotels and hospital sectors vis-à-vis the industrial sector can be achieved at similar or higher levels of profitability. In addition, it is possible that EE projects in hotels, hospitals and clinics can be achieved with lower investments, less technological complexity, and shorter development times.

It should also be noted that the program expects that, over time, investment costs in eligible EE technologies will come down. This is because energy service and technology providers should have a broader capacity to replicate and promote a larger number of projects than before the program.

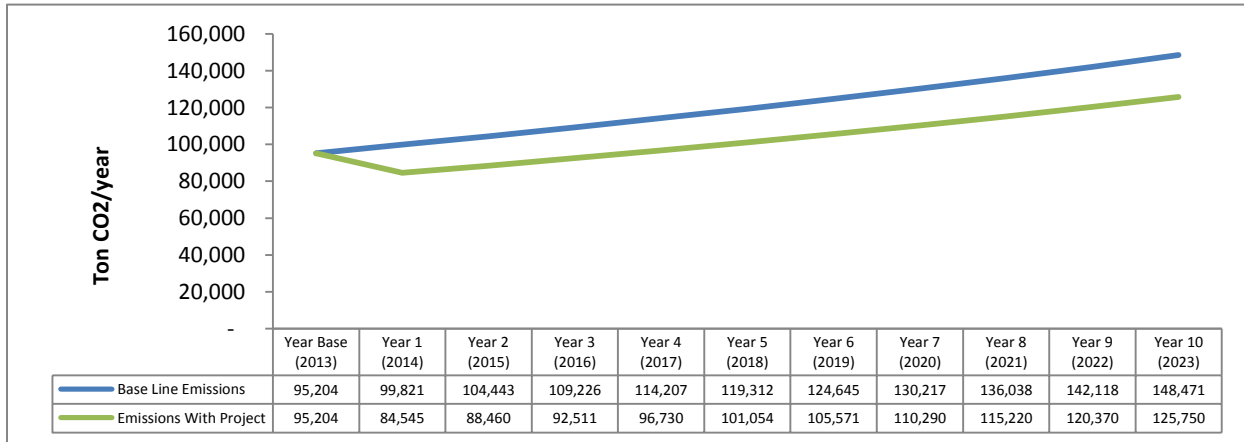
### **4. Demonstration Potential at Scale**

#### Scope for avoided annual GHG emissions.

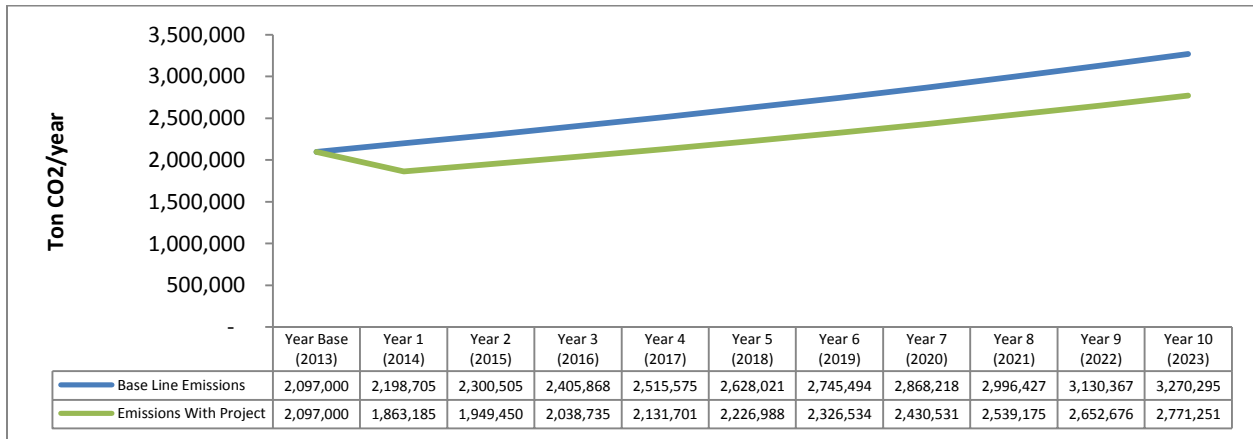
As mentioned above, it is expected that the financing model proposed by this program could remove some important barriers to investment in EE projects in Colombia, particularly in terms of enhancing the demand for EE investments, increasing the capacity of energy service providers to structure bankable projects, and reducing the risks perception of LFIs. If the model is successful, it could be applied to other productive sectors in Colombia. Indeed, if the program was replicated to support investment of similar technological changes in the service sector as a whole, the program could achieve a total of energy savings and GHG emissions reductions of 2,796 GWh/year and 335,520 tCO<sub>2e</sub> /year (considering an emission factor of 0.12 Kg of CO<sub>2</sub> for each kWh of electric energy in Colombia). It is worth noting that the energy savings and GHG emission reductions should be higher than the aforementioned estimate, as the numbers presented here are not taking into account energy savings and GHG emissions reductions stemming from thermic energy use, as the Colombian energy statistics do not provide information on the thermic energy consumption of the services sector.

It should be noted that this would have a significant impact on the Colombian context, since, according to the latest Colombian official statistics<sup>6</sup>, the final energy consumption of the services sector represents 26% of the total energy consumed in the country.

The graph below shows the trajectory of direct reduced GHG emissions that would result from the proposed CTF program (i.e. for eligible hotels, hospitals and clinics).



This graph below instead shows the trajectory of reduced emissions that would result if the proposed CTF project was replicated throughout the entire services sector of Colombia.



The application of the proposed innovative financing model for EE investments should have important transformational impacts on the energy sector and hence on additional emissions reductions over the long term. Even though the electricity sector in Colombia accounts today for 15% of the country’s energy consumption mix,<sup>7</sup> and that it is relatively clean in terms of GHG emissions,<sup>8</sup> two important dynamic considerations explain the government’s increasing interest in promoting end-use EE and/or low-carbon electricity generation (EG) investments. First, the

<sup>6</sup> UPME, 2007. [Caracterización del consumo de energía final en el sector terciario.](#)

<sup>7</sup> Other sources of energy in the country’s mix include: Oil and oil products, 45% of final energy consumption (mostly for the transport sector); natural gas 19% (mostly for the industrial sector); bio-energy 16% (mostly for the residential, industrial, and transport sectors); and coal and coke the remaining 5%. (UPME, [Energy balances](#)).

<sup>8</sup> During the last decade an average of 78% of the electricity generated in the country was based on hydropower. See ([XM – Expertos en Mercados](#)).

country is expected to continue to grow robustly in coming years due to the dynamism of its oil and mining sectors, which may demand new generation capacity that could very likely come from fossil-fuel power sources, particularly coal.<sup>9</sup> Second, in the context of climate change, the supply of hydropower could become more vulnerable to water shortages due to more frequent and intense El Niño events, exacerbating the need for new power plants with higher carbon intensities. In the absence of sustained efforts to promote end-use EE investments and/or low-carbon energy generation that can defer or substitute new investments in coal-fired electricity generation, the country's future electricity supply could be characterized by a higher carbon footprint than in the recent past. In this context, it is expected that programs such as this one will have indirect GHG emissions benefits over the long term, even larger than the program itself.

Finally, the program may have a high potential for replication in other countries in the Latin American region where barriers for EE are similar, i.e. small or absent ESCO development, little participation of LFIs due to high risk perceptions, and inadequate regulatory and risk management frameworks and instruments. In fact, the IDB expects to continue promoting this type of scheme in the region given that: (i) it has already been actively working with national development banks in other countries of the region to promote similar EE sectorial programs; and (ii) the Colombian insurance company that has agreed to develop a dedicated insurance policy to cover the technical performance risks of projects is already operating in other 9 countries of the region<sup>10</sup> and plans to promote this type of risk transfer product in those countries.

#### Transformation Potential.

Given the impossibility to rely on the ESCO model in Colombia, the studies undertaken have shown that in order to promote energy efficiency investments in the country the following barriers / issues would need to be addressed:

- *Technical:* Clients and LFIs need to have independent assurances that the providers of technologies and technical services have reliable products and the technical expertise to support the structuring and implementation of effective energy efficiency projects. They should also be able to provide warranties for their products and services;
- *Legal:* The contractual arrangements between clients and service providers need to be transparent and standardized with regards to what type of services are provided, how service providers guarantee the performance of the EE projects that they help to structure and implement, which would be the potential remedies if promised savings do not

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<sup>9</sup> According to the “Unidad de Planeación Minero Energética” (UPME), the average annual growth rate of electricity demand is expected to increase from 2.9% in 2000-2009 to 3.7% in 2009-2020. (See Generation and Transmission Expansion Plan, 2010-2024, UPME). To satisfy this demand increase, UPME projects that fossil-fuel power sources like coal will need to be tapped, resulting in new GHG emissions. Indeed, coal production in 2010 stood at 74.35 million tons and is expected to reach 144 million tons in 2020, supporting the expansion of the country's coal-fired electricity generation capacity. See: [World Coal Institute, "Coal Statistics"](#) accessed February 2010.

<sup>10</sup> The insurance group “Grupo de Inversiones Suramericana” (Grupo Sura) which has already formally confirmed its commitment to develop a dedicated insurance policy to cover the technical performance risks of EE projects is already operating in the following Latin American countries: Colombia, Venezuela, México, Peru, Chile, Uruguay, El Salvador, Panamá, and Honduras. Other insurance companies have also been contacted by the Project Team to explore their interest in developing similar transfer risk products.

materialize, and what would be the arbitration process that would help to resolve any potential dispute between beneficiary firms and technical services providers.

- *Insurance:* Clients need to be offered compensation / insurance schemes in case the promised savings/financial flows (return on the investment) associated with EE investments do not materialize;
- *Standards:* There also exists the need to have clear standards for monitoring and verifying energy savings, and a reliable system to carry out these two very important activities.

The interventions proposed in the program will be transformational as they will address each of these barriers through:

- Design and implementation of a strategy to promote the program to potential beneficiary clients (including the full technical design of some bankable project proposals to pilot the proposed financing scheme).
- Development of the methodologies, protocols and the system for the monitoring, validation and verification of results (including monitoring of performance) by a third party to be hired by Bancoldex;
- Development of a results-based remuneration scheme for technical service providers that provides incentives for high quality support;
- Development of an insurance policy to cover the risks associated with the technical services to be provided by technical services providers as well as other potential performance related issues;
- Development of a performance contract for the design and implementation of EE investment projects which should clearly establish the rights and obligations of both beneficiary firms and technical services providers under the contract.

As mentioned above, the hotel and clinics/hospital sub-sectors were selected to pilot the program's proposed financing strategy because GHG emissions reductions, although relatively smaller than in other sectors, could be achieved more cost-effectively and because they could have strong demonstration and replication effect not only in these sub-sectors but also in the services sector as a whole.

It is expected that the combination of adequate financial terms with risk mitigation instruments and technical support will increase the supply of financing for EE investment projects by local financial institutions. On the other hand, increased awareness by firms on the real risks and returns of EE investment projects coupled with strengthened capacities of technical services providers on how to structure and implement technically robust, bankable projects that can be monitored and assessed for results should support the development of the demand-side of the market. The expected increases in the supply of and the demand for financing for EE projects should have a major transformational impact on the market for energy efficiency projects in Colombia. In fact, the program would constitute an alternative financing model to the ESCO model in a country where technical services providers operating under the latter model are practically inexistent. The program will support not only the development of the technical services and technology sectors for EE, but also of the insurance sub-sector within the local financial sector.

## 5. Development Impact.

The CTF Energy Efficiency Financing Program's development impact will be reflected not only in reductions in energy costs that enhance the competitiveness of beneficiary firms but also in the creation of new jobs in the services sector, mainly in the sub-sectors of hotels, clinics and hospitals, and in other productive sectors.

### Potential efficiency gains.

By providing financing to these sub-sectors so that they invest in more environmentally-friendly infrastructure, it is estimated that the program will directly and indirectly result in reductions in energy use for the service sector of about 16%, which should result in a reduction of carbon intensity of the economy from 24.45 tons of carbon dioxide per million USD (tCO<sub>2</sub>e/\$m) to 20.53 tCO<sub>2</sub>e/\$m. Besides, this program will produce a demonstration effect in Colombia on innovative and viable solutions for increasing competitiveness as a result of the deployment and replication of low carbon technologies throughout the services sectors and other productive sectors.

### Contribution to Millennium Development Goals.

By reducing energy costs within total operational costs, resources can be re-invested in the business or invested elsewhere in the economy, contributing significantly to the achievement of the MDGs. First, by reducing the energy bill and increasing access to clean energy, a number of additional jobs can be created for the construction, installation, and manufacture of a new facility or piece of equipment, and in industries supplying the clean energy sector. Second, job expansion in hotels and clinics/hospitals, where women are more represented, offers opportunities for gender-inclusiveness. In 2010, the MDG indicator employment-to-population ratio (MDG 1) was about 60 percent (47.4 and 73.5 respectively for females and males). The share of women in wage employment in the non-agricultural sector (MDG 3) has been dropping since 2001 and it was about 47.5 percent in 2008<sup>11</sup>.

In the case of hotels, the sector has some 6,000 firms, most of which are small and medium size firms operating with obsolete, energy inefficient technologies. Given the very rapid pace at which the hotel sub-sector has been growing at, energy use and GHG emissions are likely to contribute to a further deterioration of the environment unless new EE standards are adopted. In the case of the health sub-sector, it has some 9,605 private health institutions authorized by the Ministry of Health, which also have been operating with outdated, energy-inefficient technologies. This sub-sector has also been growing at a very rapid pace in recent years. Between 2000 and 2010, it grew by 66% in real terms. A challenge remains with respect to introducing new technologies as end-users lack knowledge of the economic benefits of more energy efficient equipment and perceive that EE investments are expensive (direct costs) and may not have the returns in the very short term of other alternative investments (opportunity costs).

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<sup>11</sup> Indicators for Colombia "1.05 Employment-to-population ratio" and "3.02 Share of women in wage employment in the non-agricultural sector". Data collected from <http://www.devinform.info/> Version 6.0 on April 2013.



### Gender benefits.

The CTF Energy Efficiency Financing Program will have significant positive impact on women. In particular, the job expansion in hotels, clinics and hospitals will benefit proportionally more women than men, due to their strong labor concentration in these sub-sectors. From a development perspective, income through paid employment is the main path through which families can break the vicious cycle of poverty and reach a minimum standard of living. Since women are relatively more concentrated in both the hospital and hotel sub-sectors, they are likely to be the main beneficiaries of an increased competitiveness of beneficiary firm in response to EE investments. For the record, the hotel sub-sector employs around 128,000 people, of which 83,200 (65%) are women, while the health sub-sector employs 92,256 people, of which 65,561 are women (or 71% of that total).

### Environmental co-benefits.

Apart from promoting the reduction of GHG emissions, the program will ensure the proper decommissioning and disposal of equipment that could have adverse impact on the environment, such as air conditioning units. By doing so, the program would help to fulfill the government's commitments under the Protocol of Montreal.

## **6. Implementation Potential.**

### Public policies and institutions.

*Country and sector strategies:* As explained in the Proposal for Operation Development, in addition to respond to the Colombian government priorities under its IP with the CTF, the proposed program is aligned with a number of strategic goals and priorities of the Colombian National Development and Energy Plans.

The Colombian government has demonstrated in recent years its commitment at reducing the energy intensity of its economy through a variety of policy and regulatory measures that seek to create an enabling environment for EE. These include: (i) creating a legal framework for EE and standard setting mechanisms; (ii) establishing a national EE commission; (iii) directing the energy regulator to set efficiency standards for appliances and systems; (iv) carrying out extensive studies on carbon abatement and a national plan for EE; (v) encouraging distribution companies to promote EE investments; and (vi) granting tax incentives for such investments. In particular the National Energy Plan 2006-25, establishes guidelines for energy policy with a long-term vision to ensure energy supplies, including a Program for the Rational and Efficient Use of Energy and Other Forms of Non-conventional Energy (PROURE). More recently, though Resolution 180919 of June 01, 2010, the Ministry of Mines and Energy adopted an Indicative Plan of Action 2010-15 to implement the PROURE program. Within this Plan, the country adopted a series of energy saving targets amounting to a 17% reduction in the use of energy by 2015.

Furthermore, the 2010-2014 National Development Plan “Prosperity for All”<sup>12</sup> highlights the importance of promoting the productivity and competitiveness of the country’s productive sectors. The section of the National Development Plan on Sustainable Growth and Competitiveness further identifies the tourism sector (and in particular hotels and health tourism) as a strategic sector of its productivity transformation program. Both the National Development Plan<sup>13</sup> as well as the government’s “Institutional Strategy for the Articulation of Policies and Actions Plans on Climate Change<sup>14</sup>” acknowledge the challenge of achieving the unprecedented growth and productivity goals of the Development Plan in a sustainable manner and highlight the importance of promoting energy efficiency as one of the key measures to promote competitiveness and environmental sustainability.

*Institutional and implementation arrangements:* The program will be executed and coordinated by Bancóldex, a second-tier national development bank in Colombia. Bancóldex has a long track record implementing IDB operations and is a solvent institution with exemplary risk management practices.

Bancoldex has a strong mandate by the Colombian government to support the implementation of its national low carbon development priorities. In fact as a second tier development bank, Bancoldex is in a unique position to promote programs such as the one being proposed, as it can easily establish the connection with all of the relevant public and private sector actors that need to be involved in the promotion and financing of climate change mitigation projects.

To support Bancoldex in the coordination and execution of the program, a dedicated technical cooperation<sup>15</sup> will fund activities such as:

- The hiring of a technical coordinator to support Bancoldex with the day to day management and coordination of program activities;
- Promoting the program to potential clients and LFIs;
- Supporting the technical design of a number of pilot projects for demonstration purposes;
- Supporting the design, development and implementation of a monitoring and evaluation system for the monitoring and assessment of program results in terms of energy savings and GHG emission reductions.

Finally, the effective implementation of the program also relies on the fact that the proposal and its implementation is being developed in strong consultation and collaboration with a number of key actors in Colombia, including the Ministry of Energy, the Association of Hotels (Cotelco), the Colombian Association of Hospitals and Clinics (ACHC), local energy service providers, technology providers, local insurance companies and those LFIs that are more active in green finance.

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<sup>12</sup> See the references on the importance of supporting MSMES development and the health tourism in the chapter on [Sustainable Growth and Competitiveness](#) as well as hotels in the section on tourism as a driver for regional development.

<sup>13</sup> In particular section D. 2 of the Plan’s chapter on [Environmental Sustainability and Risk Prevention](#) refers to reinforce the goals of the PROURE and the importance of promoting energy efficiency technologies in various sectors of the economy, including the services sector.

<sup>14</sup> [CONPES 3700, 2011](#).

<sup>15</sup> See technical cooperation proposal CO-T1332 - Mitigation of GHG Emissions through EE in the Hotels and Clinic/Hospital Sub-Sectors: Objective and Components.

*Sustainability:* In addition to the solid basis under which the program is being developed, its sustainability is expected to come from the increasing awareness of relevant market players on the risks and returns of EE projects and the strengthening of their capacities to structure and finance effective EE investment projects for the retrofitting of existing buildings. Furthermore, as mentioned before, it is expected that the program success would stimulate its replication in other sub-sectors of the services sector as well as in other productive sectors.

#### Mobilization of resources.

On top of the USD 10 million in IDB lending that will be mobilized as co-financing of CTF resources, it is expected that additional resources will be provided by LFIs to finance those projects whose costs exceed the maximum financing amount to be provided under the program. In principle, program resources could be leveraged by approximately one half by LFIs.

Furthermore, as the program is expected to pilot a model that can later be replicated in other sectors, the program would be mobilizing additional private sector resources as LFIs and other relevant private sector actors become more knowledgeable about the risk and returns of EE investments.

### **7. Additional Cost and Risk Premium.**

As explained in more detail in the Proposal for Operation Development and the Characteristics of the Program, while the technology changes proposed by this program are normally profitable, the market studies on energy efficiency barriers undertaken during the preparation of the operation identified that one of the most important barriers for financing these technologies was the lack of trust by potential beneficiaries on their capacity to generate enough energy savings in a reasonable period of time so as to repay the initial investment.

Local Financial Institutions (LFIs) also tend to apply a traditional “asset-based” lending approach when financing energy efficiency projects, limiting the loan amount to a maximum of 70%-80% of the value of assets financed (or collateral provided). Unfortunately, LFIs give little or no collateral value to EE equipment. Furthermore, even though there is significant value in the cash flow generated by energy efficiency investment projects to investing firms, most LFIs typically do not recognize and/or are not willing to rely upon that cash flow as a basis for those firms to repay their loans or increase their borrowing capacity. In addition, even if they would accept to consider such value, the incapacity to validate the risks involved in the generation of these positive cash flows would still refrain them from considering energy efficiency projects as financially viable business opportunities. Consequently, LFIs tend to assign little or no value to the cash flow generated by EE investment projects, and thus require firms to encumber their internal credit capacity to finance such projects.

The lack of understanding by clients and LFIs regarding the potential returns of energy savings, the high perceived risk of new, more efficient technologies, and the lack of some sort of guarantee on the energy savings generated by EE projects (mistrust in the performance of EE projects and EE audits) are typical barriers for investments in energy efficiency projects in many countries.

As advanced before, the proposed program aims at addressing these barriers with a combination of actions including: technical backstopping to clients; investment financing at adequate terms and conditions; and risk management tools.

## **CO-T1332 - Mitigation of GHG Emissions through EE in the Hotels and Clinic\Hospital Sub-Sectors: Objective and Components**

### **I. Description of the Associated Loan/Guarantee**

CTF Energy Efficiency Financing Program for the Services Sector (CO-L1124).

### **II. Objectives and Justification of the TC**

This Technical Cooperation (TC) will support the following loan operation under development: CO-L1124 CTF Energy Efficiency (EE) Financing Program for the Services Sector. The objective of loan operation CO-L1124 is to support Colombia's efforts to enhance the competitiveness of the hotel and clinic/hospital sub-sectors, while reducing GHG emissions, through the piloting of an innovative financing model for EE projects. Its specific objective would be to increase EE investments in hotels and clinics/hospitals. CO-L1124 will be funded with a US\$10 million loan from the IDB's Clean Technology Fund (CTF) Trust Fund resources. These resources will be complemented with US\$10 million in counterpart contributions from an IDB loan under execution with Bancoldex.

As a result of market studies on the potential to finance EE projects in Colombia, it was identified that many of the barriers to access investment credit were either related to lack of knowledge by potential clients and/or by perceived risks by local financial institutions (LFIs) and clients. In order to address these barriers, a dedicated financing line needs to be accompanied with a series of activities to ensure that actors are aware of the benefits of EE investments, perceived risks are addressed, and that the projects financed actually result in energy savings and GHG emission reductions (see figures 1 and 2 below). To that end, this TC has as its main objective to support the execution of operation CO-L1124 through: (i) the structuring of demand, by training and promoting the financing line among LFIs and potential beneficiaries; (ii) promoting pilot cases through energy audits and detailed project design in order to generate bankable proposals that would gain access to investment credit from Bancoldex's credit line so as to demonstrate EE benefits; and (iii) designing and implementing a system for the continuous monitoring of projects and the assessment of their results in terms of energy savings and GHG emission reductions.

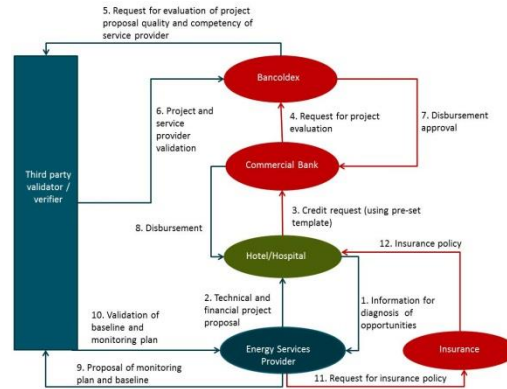
### **III. Description of activities/components**

As described in figures 1 and 2 below, the credit line to be created with resources from CO-L1124 is expected to be complemented by 3 main elements as incentives:

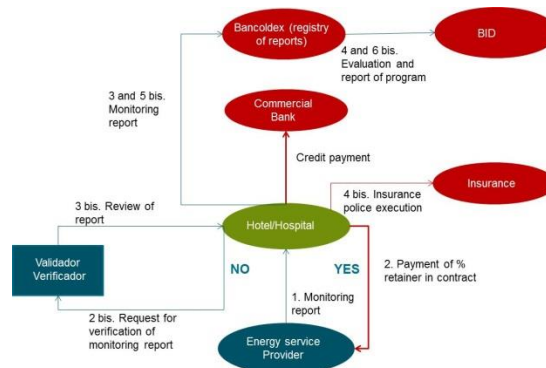
- a. Technical backstopping by energy services providers to beneficiary firms (which should be amortized through the credit line itself) in order to: (i) estimate potential energy savings, (ii) design eligible projects; (iii) develop monitoring plans; and (iv) measure and report energy savings and GHG emissions reductions achieved;
- b. Identification of the terms and conditions of the financing line so that it takes into account the costs and returns of EE investment projects (which will be partly defined based on studies now under way);
- c. Risk management tools through: (i) a third party verifier that will assess both: (a) the technical quality and expected results of project proposals made by technical services providers, and (b) the technical expertise of those providers; and (ii) the design of the contractual arrangements required by a performance insurance policy to be developed by a local insurance company in order to

insure firms investing in EE against shortfalls in agreed energy savings during the loan repayment period of their EE investment.

**Figure 1: Phase 1 - design of proposal and credit disbursement**



**Figure 2: Phase 2 - project implementation**



The TC is intended to support the execution of operation CO-L1124 through 3 main components:

**Component 1:** Supporting the structuring of the demand side of the market by promoting the financing line and by training LFIs and potential beneficiaries on: (i) the benefits that can be obtained through EE investments in terms of energy savings and GHG emission reductions; and (ii) on the real or perceived risks associated with this type of projects. This component will include the development of a promotion strategy, including promotional materials and events. It will also include the development of the basic requirements and guidelines related to the technical services to be provided to project developers by energy services providers (e.g. basic technical and financial information of a project proposal, standard contracts with risk mitigation measures, specification of technical requirements for eligible projects, etc.) as well as the definition of the risks that the performance insurance policy would cover.

Two consultancies (individual and/or firm) will be hired to support the activities stipulated in Component 1. One individual consultant will be required to support Bancoldex with specific technical capacity. A consultancy firm or individual consultants will also be hired to support the development

of workflows for the financing line operation as well as standards and examples of contracts and templates. The execution of this component will also entail the cost of consultants and events needed for outreach, training and consultation with relevant actors (such as Local Financial Institutions, technical service providers and potential clients).

**Component 2:** Promoting pilot examples of auditing of energy savings potential of specific clients and design of project proposal to gain access to credit and demonstrate its benefits. While technical backstopping for accessing the credit line would be implicitly integrated in the financing line structure itself and supported through component 1, it is considered that it is also important to quickly demonstrate to the market successful project cases where clients can obtain positive returns and address some of the risk perceptions associated with energy efficiency projects. This component will support 6-8 potential eligible clients of the Bancoldex credit line with different sizes and typology to assess potential energy savings and prepare documentation to submit the project proposal according to the financing line specifications in order to gain access to credit.

One consultancy firm or individual consultants will be hired to support identification of pilot projects, undertaking energy auditing and supporting project preparation. The execution of this component will also entail fees and travel expenses for consultants.

**Component 3:** Designing and implementing a monitoring and evaluation system for the continuous supervision of projects and the assessment of their results in terms of energy savings and GHG emission reductions. One important element to mitigate perceived risks from the market is to ensure that a third party reviews project proposals from a technical point of view and ensures that energy services providers have the technical qualifications to design EE projects. Ensuring that results are tracked and monitored is also key to account for the energy savings and GHG reductions of the projects and the program as a whole. This component will include the design and implementation of an independent system that will control the quality of projects and ensure the proper reporting, monitoring and verification of the expected results of the projects and the program as a whole. As such, it will support the development of the necessary templates and a methodology to review projects and a registry or information system where Bancoldex can record all the activities undertaken under each sub-project proposal as well as the monitoring of sub-projects and program results. Finally, this component will support an impact evaluation of the program towards the end of the period of execution.

One consultancy firm will be hired to develop the activities identified above. The execution of this component will also entail the organization of events for consultations on the requirements and conditions of the financing line with relevant actors (such as technical service providers and potential clients) as well as fees and travel expenses for the consultants.