

# Responses to Questions from CTF TFC Members on the Project “Innovative Instruments to Foster Energy Efficiency in SMEs in Colombia”

*Prepared by the Inter-American Development Bank (IDB)*

November 30, 2014

We would like to thank the governments of the United Kingdom and the United States for their questions. Please find below our responses.

## Questions by the United Kingdom

*(1) **The SME sector:** Firstly, it is not very clear from the proposal as to why the SME sector has been prioritised for energy efficiency measures. On page 10 mention is made of the potential savings in the Industrial sector as well as the tertiary and outdoor lighting sectors, but the potential savings in the SME sector are not given and the figures that are given (para 12) are not comparable. Could the team please explain why the SME sector has been chosen as opposed to other sectors? Secondly, within the SME sector, will there be a focus on any particular branch of the sector?*

The SME market segment is being prioritised for a couple of reasons. Firstly, relative to larger corporations with stronger balance sheets, SMEs face significantly higher challenges in terms of access to finance. This challenge is particularly exacerbated for EE investments, given that their very nature (high upfront capital cost, longer payback, limited collateral offered by EE equipment) requires financing terms (e.g. mid/long-term loans) normally not available to them. This project therefore aims, among other things, to demonstrate —by establishing a track record of successful projects— that EE financing instruments in this market segment, utilising financing modalities that overcome such barriers, can have acceptable performance. Secondly, SMEs tend to have fewer energy supply alternatives and therefore fewer opportunities to reduce energy costs, which in cases represent a significant share of their operational costs. Summing up, since we do not see EE as an isolated goal per se, but rather as part of a broader developmental objective, the focus on SMEs (both as final borrowers as well as ESCOs, which also tend to be SMEs), has to do with an aim to enhance their development and competitiveness.

Since we wanted to achieve the most relevant and transformational results with the limited resources available, we decided to focus on medium-sized firms (the preparatory analysis identified 5,365 medium-sized enterprises, of which 679 in the industrial sector, and 4,351 in the commercial and services sector). The problem with micro and small enterprises is that, in the absence of specific incentives to promote EE, transaction costs are often too high to make very small EE projects economically viable. Nonetheless, opportunities to bundle smaller projects together (e.g. through demand-side EE direct install programs) will be explored and pursued to the extent possible. Larger corporations may also access financing from this facility in cases aligned with the program’s rationale and demonstration objectives.

The investment potential identified in the proposal for the industrial and commercial sectors, for example, includes therefore both SMEs and large corporations. The project preparation

study estimated potential ranges of energy savings in SMEs based on a number of different inputs, including the field experience from consultants, walk-through audits (WTAs) carried out for 12 prototype interventions in the context of the preparation study (7 in the industrial sector and 5 in the tertiary sector), and available literature on the subject, at local, national, regional and international levels (including from UNIDO, IEA, UPME, etc.). The potential energy savings for SMEs derived from this analysis are: (i) electricity: from 17% in the textile sector to 32% in the pulp and paper sector, and 40% in the public lighting sector; (ii) natural gas: from 10% in the textile sector to 25% in pulp and paper; (iii) other fuels: from 16% in iron and non-ferric materials to 29% in pulp and paper. While this analysis focused on the SME market, the overall energy saving and investment statistics were not broken down by company size.

The market study identified the subsectors with the highest potential for EE investment and savings (for example, 'Food, Beverage and Tobacco', 'Chemicals' and 'Pulp and Paper' rank highest in the industrial sector). The facility manager will utilise the insight coming from such study in the investment origination stage, as the subsectors identified would also present the highest potential for later replication and scale-up. The focus will however not be exclusive to any set of subsectors and closed to others, although attention will be paid to other IDB/CTF programs (for example, the one targeting the hospital/clinic and hotel subsectors) to avoid overlaps and ensure complementarity.

***(2) GHG savings: Could IDB present explicitly and clearly the methodology and assumptions underlying the GHG savings estimates presented in the PAD, including project baselines, lifetime of technology/investments, adjustment for rebound and emissions conversion factors?***

The methodology for the calculation of the GHG emission reduction followed the steps below:

1. As a result of the preliminary analysis and during the workshops and meetings with different stakeholders, the 12 prototype interventions were identified, representing typical energy efficiency measures to be targeted by the CEET. Such prototype interventions were related to type of technology, rather than sector, as the same type of measure (e.g. co-generation) can be applied in a number of sectors and subsectors.<sup>1</sup>
2. For each of the prototype interventions, the project team identified real businesses which could be the typical recipient of the intervention, and at least one walk through audit (WTA) was performed in private sector establishments for each of the prototype categories.
3. For each WTA, the project team constructed the baselines, considering the fuels involved at that particular facility (e.g. electricity, natural gas, coal, diesel, renewable, etc.), based on historical data. Further, the project team selected, for each facility analysed, the best available technology in Colombia to reduce their energy costs and

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<sup>1</sup> The complete list of prototype measures include: For the industrial sector: improvements in lighting or motors; small co-generation; waste recovery (biomass and/or biogas); small-scale renewable energy for self-consumption; improvements in energy management; fuel switch towards less carbon-intensive options; and improvements in productive processes. For the tertiary sector (including the commercial, services and public lighting sub-sectors): efficiency improvements in lighting, A/C, and motors; energy efficiency in office buildings; energy efficiency in supermarkets/large surfaces; energy efficiency in other establishments (including military bases and sports clubs); and street public lighting.

CO<sub>2</sub> footprint. Each energy conservation measure is detailed in the WTA report, including investment, % of potential energy saving, potential GHG savings, lifetime, IRR, payback timeline, and NPV.

4. For each WTA, the potential savings for each of the relevant fuels are converted in estimated GHG emission reductions using emission conversion factors generally used under the Clean Development Mechanism. For the case of electricity from the grid, the project team used the official Grid Emission Factor provided by UPME.<sup>2</sup>
5. For some WTAs in specific facilities, more than one prototype measure was identified (e.g. improvement in efficiency of motors and small-scale cogeneration).
6. As a result of the above process, we obtained average emission reduction potential for the various typical measures corresponding to investment opportunities. We then built the financial model, assuming that the CEET will be able to finance a certain amount of each typical measure, with a focus on cogeneration, waste revalorisation and small self-generation from renewables. The assumption in terms of investment in each of the typical measures was then multiplied by the relative emission reduction potential of each measure to obtain an estimated amount of GHG emission reductions at the portfolio level.

***(3) Developmental impact: There is no mention of the number of jobs, potential health benefits, that could be created through this project. Could the project team please elaborate further on the developmental benefits of the project?***

As mentioned, development benefits beyond the GHG emission reductions include: (i) energy savings; (ii) increased competitiveness of SMEs; (iii) development of ESCOs and other energy service or equipment providers, and (iv) increased access to financial services by SMEs, among others. Direct beneficiaries of this project will include: (i) SMEs with unrealised energy efficiency potential, which are interested in improving their productivity and competitiveness through efficient management of energy consumption; (ii) existing and prospective ESCOs and ESPs, who support client firms in the assessment of energy efficiency opportunities, as well as with project structuring, financing and implementation, and (iii) local financial institutions, who are positioning themselves to develop financial products for EE projects for their client-base. In all cases, the global environment will be an additional beneficiary, due to the reduction in greenhouse gas (GHG) emissions, connected to the improvements in EE.

Expected results from project implementation will be measured and reported through metrics including the number of SMEs that adopt new energy-efficient technologies and energy saving good practices, the number of firms that gain access to project financing more suitable for EE, the number of SMEs that apply improved energy management systems as a result of the project activities, and their average reduction in annual energy use.

The project will produce impacts in terms of economic, internal management and environmental benefits for both direct and indirect beneficiaries. Such impact will be measured by tracking the expected reduction in average annual energy costs per unit of

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<sup>2</sup> Unidad de Planeación Minero Energética, Ministry of Energy and Mines. The latest grid emission factor for Colombia was calculated by UMPE in 2008 and is set at 0.2917 kg CO<sub>2</sub>/kWh. See: *Cálculo del Factor de Emisión de CO<sub>2</sub> del Sistema Eléctrico Interconectado Nacional para Determinar la línea base de Proyectos MDL*, UPME, 2010.

product (energy intensity) for the participant firms, as well as the number of firms that increase their annual sales through an enhanced use of performance-based energy contracting.

The systemic impact on the Colombian economy and the relative growth of the EE market segment will affect various areas. In the area of access to finance, through the CEET the project will assume the front-end, higher risks of a number of investments, generating a project portfolio can then be offered to local financial institutions, enabling them to ‘enter’ the market for EE projects at a lower risk level.

In terms of regulations, the definition and implementation of a voluntary technical standard for ESCOs, coupled with the further dissemination of existing EE standards (e.g. ISO 50001 and 50002 for energy audits, 50006 for baseline performance indicators, and 50015 for measurement and verification) will multiply sustainability, competitiveness and productivity. In addition, the project will build capacity among technical consultants, ESCOs and SMEs who can replicate the knowledge going forward. Indicators of systemic impact from the MIF’s Corporate Result Framework that will be applicable to this project include (i) number of markets or sectors that emerged or are expanded with MIF support, and (ii) number of key public or private actors or institutions changing or applying new practices based on MIF-sponsored projects or knowledge.

***(4) Attribution of results: Could IDB clarify how overall project results were attributed to the two different tranches of CTF finance? Will the two CTF elements report against separate result frameworks? (Ideally we would want to track project performance as a whole.)***

We will track results jointly, since the two CTF tranches will be supporting one unique investment facility and program. In the current proposal we have indicated (i) the results to be attributed to the junior CTF tranche submitted for approval, but also (ii) the expected joint results (in terms of GHG emission reductions, energy savings, and financing leverage). As explained in various footnotes in the proposal, the attribution approach was very simple: the total GHG emission reductions, energy savings and renewable generation results were estimated for the whole facility (encompassing both CTF tranches) and the share of such results to be attributed to the second CTF tranche (and therefore proposed as its targets) was determined based on its proportion relative to the combined CTF investment. For the purpose of transparency, in the proposal we have indicated the results to be attributed to both (i) the combined and (ii) the junior tranche of CTF, but putting just the later in the results table for this proposal to avoid double counting. Making this distinction was also necessary given that one tranche had already been approved and was therefore not appropriate to request new approval. For reporting purposes once implementation begins, one combined result framework will be utilised, including the mandatory CTF indicators (with the combined total targets on GHG, energy savings, renewable generation and co-financing).

***(5) Interplay with C-SEF: We found the new request for approval well substantiated e.g. clear arguments on why this is an effective use of CTF finance. However there was limited rationale provided on how and why this project represents a good and additional use of the previously approved C-SEF funding? How will the CTF USD5m be deployed, would it be pari passu with the IDB senior loan tranche? In addition, we see that IDB also received a USD1.1M grant funding***

***under C-SEF, the use of which is not referenced in the document. Could the IDB clarify how this is integrated into the project?***

The C-SEF program was originally conceived as a joint IFC/IDB program to provide EE financing through commercial bank credit lines. Consistent with this, a first CTF investment (channelled through IFC, but with co-financing from IDB too) was conducted, in the form of a risk sharing facility with Bancolombia. Following this initial investment and after a couple of years exploring the original model with other commercial banks in Colombia, the IDB found limitations in market uptake (i.e. commercial bank interest) for it. It therefore proposed to the CTF in 2013 expanding the financial intermediation agents and models that could be considered for subsequent CTF investments. Upon CTF approval of such amendment, the IDB identified the hereby proposed Trust structure as the most appropriate one to pursue the original objectives of the program, and thus to build a track record of investment performance that could be replicated.

The proposed Trust structure/investment vehicle would not be feasible, however, with just the C-SEF tranche of CTF and IDB financing, given that (i) that tranche was approved as loan and loan guarantee products, and expected to be positioned in a relatively senior position (additional funding sources were required to take on the equity/first loss position), and (ii) the amount of CTF and IDB resources under the C-SEF program were too limited to allow the Trust to reach a financially viable size. C-SEF funding would only allow for a size of USD 10M. The further USD 4M CTF risk capital (equity/first loss guarantee) and grant contribution requested under this program, along with the contribution of the IDB/MIF, should allow it to reach a ~USD 24M level that would make it financially viable. The use of C-SEF to co-invest in this facility is therefore not only aligned with the amendment to C-SEF approved by the CTF Committee in 2013, but also necessary to allow the necessary debt leverage and size of the facility to make it viable.

Regarding the terms of the CTF C-SEF tranche, the approved terms provided for the possibility of structuring CTF resources as either (a) senior debt pari passu with IDB, or (b) a risk sharing facility/guarantee structure, either pari passu or junior relative to IDB. Since Colombian regulation requires investments in Trusts of this type to be made in local currency, and CTF cannot provide local currency, the only option is to have IDB front the debt resources (for an amount larger than what would normally be allowed, according to its maximum participation limits) and have CTF behind IDB as a guarantee. With regards to the seniority of the CTF guarantee position, having it in a junior position (absorbing the second loss after the equity tranche) will allow IDB to maximise the size of the debt tranche—and therefore the leverage—it can provide. As previously explained, such maximisation is needed to enhance the financial viability of the facility.

With regards to the grant resources received under C-SEF, they are an integral part of the program plan (and the funding for the preparation so far), but we forgot to mention them in the summary table on page 21. The USD 1.11M will be used as follows:

1. USD 0.560M – Support 40 early-stage energy audits in SMEs (most of them underway or completed already), helping create a pipeline for the facility. Some of these initial audits (those whose results are catalysing investment decisions by SMEs) will need to be complemented with detailed engineering studies, as required for loan

applications. The additional grant resources hereby required will partially subsidise their cost, where needed.

2. USD 0.275M – Utilised for a) a broad market study on the EE market, helping inform and design not only some aspects of this operation but also other CTF and IDB projects under development; b) fund coordination work with the multiple public and private stakeholders relevant for program design of the multiple CTF EE projects in Colombia.
3. USD 0.095M – To be utilised under this program to partially fund the Knowledge Management component (along with some additional new funding mentioned under this proposal).
4. USD 0.180M – MDB Project Implementation and Supervision fees for the C-SEF tranche of the investment, implemented by a different IDB department than the one implementing the junior tranche.

## Questions by the United States

### ***(5) Why has the IDB chosen a model that is heavily focused on developing the ESCO market in Colombia?***

The Colombian market for energy efficiency services is still in its infancy. Previous experiences of the IDB and other institutions to support the development of energy conservation measures have shown that a set of technical, financial and awareness barriers hamper the realization of the existing potential for energy (and dollar) savings. On the technical side, with the exception of some large firms, private sector actors do not generally have the in-house expertise to identify EE opportunities, select the best available technologies to take advantage of the opportunities and structure a financing plan to be able to implement the energy conservation measures. On the financial side, local FIs are reluctant to accept energy savings contracts as collateral for the financing, and still require asset-based collateralization, which, for most SME, is difficult to provide. Finally, there is a general lack of awareness of the benefits of EE measures in terms of the financial, environmental and process enhancement/rationalization terms. Given this background, ESCOs appear to be in a position to catalyze change, as they are the best placed players in the market to address each one of the 3 barriers identified above. ESCOs can have a multiplier effect on the promotion of EE within a market such as Colombia, since EE is their main business model focus, and they are able to take higher controlled risk through their specific expertise, than would a typical SME whose business is the production of pulp and paper or bricks. Finally, it is worth considering that the ESCO model has worked effectively to promote EE in the North American and European markets, which again gives additional inputs to focus on this specific intermediary to reach the transformational goal of fostering EE in Colombia, with the limited available financial resources we have.

### ***(7) How broadly accepted is the EPC model in Colombia? Are there similar business models for other sectors that are accepted in Colombia?***

The Energy Performance Contract (EPC) model in Colombia is not broadly utilized. There exist 3 main independent ESCOs and a handful of other ESCOs which are spin offs of energy utilities. These actors are familiar with the energy performance contracting in Colombia, although they don't necessarily use it with all projects or clients. The most commonly used

variation of the ESCO/EPC traditional contract is a prospective saving proposed to the client by the ESCO and a trial period after the installation. At the end of the trial period (normally up to 3 months), ESCO and client set the amount of monthly repayments from the client to the ESCO at the level of the average monthly savings realized during the trial period. In this way, the payment will remain constant for the term of the agreed contract, without monthly fluctuations depending on the client's actual energy use.

This project will provide both technical and financial support to help expand the use of EPCs. For example, on the technical side, the program will help standardize EPC contracts to promote easier, more reliable, and thus broader adoption. We are not aware of similar business models for other sectors available in Colombia, with the exception of another IDB/CTF EE program similarly promoting EPCs for specific subsectors (hospitals and hotels), and which is complementary to the proposed project.

***(8) Why is there no commercial bank participation in this project?***

As mentioned in the answer to UK's question #5 above, the current proposal emerges from the experience and lessons of the early stage of the CTF C-SEF program in Colombia, initially targeted exclusively at commercial banks. After an initial project with Bancolombia, we did not find sufficient interest in other relevant commercial banks to implement the type of financing models and instruments that could make a difference in the target market, and particularly at the speed and volume needed to provide effective demonstration in the short term. We therefore analyzed alternative financial intermediation models to be able to effectively support and demonstrate the performance of these types of projects and financing approaches.

This said, there has been careful consideration of the importance of keeping commercial banks involved in the program to enhance its demonstration value. Commercial banks will participate in various ways:

1. Trustee. As mentioned in the proposal (see §39), IDB intends to contract a commercial bank to act as Trustee of the CEET. This will give them direct exposure to the program and its investments.
2. Providers of ancillary banking services (credit evaluation, recoveries/collection). These services will be outsourced, probably to the same bank acting as Trustee.
3. Local funding providers. As explained in the proposal (see §47.a), in order to be able to provide local currency financing (which CTF cannot provide directly), one of the structures under consideration and due diligence is having a local commercial bank provide the debt financing to the facility in local currency, with IDB and the CTF providing guarantee coverage. In such case a commercial bank will also have direct participation and exposure to the investments.
4. Co-financiers. Commercial banks would also participate in the program as co-financiers at the sub-project or facility level. They could lend alongside the facility to co-finance a project, or could —upon some initial portfolio development and demonstration— decide to lend or invest in the facility. In the latter case, they could (a) co-finance with IDB to further leverage the facility, (b) refinance it (replace the IDB debt portion), or (c) buy it (purchase the equity stake or all the assets of the facility). Options (b) and (c) constitute some of the exit options for IDB and CTF identified in the proposal (see §36).

5. Recipients of capacity building activities. Local financial institutions will be one of the priority targets of the capacity building activities, aiming to transfer expertise on how to assess EE projects, particularly under EPC models.

These additional types of engagement with commercial banks are expected to still provide the sought demonstration effect for the contracts/financing modalities, as well as for the target sectors and technologies that the facility will support, which should be the basis for subsequent replication.

***(9) Has it considered a model where it would be working more directly with commercial banks to encourage their entry into the energy efficiency/ RE market?***

Yes. Please refer to answers #5 and #8 above.

***(10) How does the efficiency of CTF funds compare to other financing mobilized compare to other CTF supported energy efficiency programs in other regions?***

While we think this comparison could be an interesting exercise, if properly done, we would strongly caution against looking at the related metrics (cost effectiveness, leverage) without a robust comparative analysis of other aspects, such as grid emission and other baseline factors, market segments and technologies targeted, and —most importantly— additionality of CTF resources in each operation, as these elements can result in misleading metrics and understanding of the efficiency and leverage of the interventions. Another source of misleading asymmetries is the assumptions in terms of leverage/co-financing in each program proposal, which may differ significantly in their accuracy as they are made ex-ante.

With this caveat, and to give at least a basic sense related to the question, we took a sample of three RE/EE projects in other regions. Please note that we do not know the extent to which their figures —which differ significantly with each other— or their average is representative of the CTF portfolio of similar programs. We do not know either to what extent the factors mentioned above in each of these countries and programs make them comparable to those in the proposed case. Below please find the results of the quick comparison:

	Colombia CEET project*	Average of sample of 3 RE/EE programs in other regions
CTF cost-effectiveness (CTF \$/TCO <sub>2</sub> reduced)	11.7	4.2
Total funding cost-effectiveness (Total \$/TCO <sub>2</sub> reduced)	56.1	38.5
Financial leverage (1:X ratio)	3.8	7.3

A couple of observations related to the previous comments would be relevant here:

- Cost-effectiveness: the emission factor in the Colombian grid —0.2917 kg CO<sub>2</sub>/kWh— is among the lowest in the world, given the high share of hydro power in the electricity mix. This results in relatively low levels of mitigation for electric energy efficiency projects, thus making mitigation cost-effectiveness of similar measures relatively lower in Colombia. The benefits in terms of reduction of electricity consumption and costs —one of the additional development benefits of the program— would not however be negatively affected by this.

- Leverage: the leverage of the facility, while significant at about 1:4, is lower than for the other projects. We cannot however draw any meaningful conclusion based on this as the financial structures and the approach to estimate leverage or to define the size of the CTF resources needed to achieve a certain financial effect may be completely different across projects.

***(11) Are there ways to enhance the efficiency of the TC elements of these projects by managing them together – given their strong similarities?***

Efficiencies in the use of TC resources are already being captured given that the same team at IDB will be directly managing or providing inputs for the use of TC resources across the various CTF and SREP EE and self-supply programs recently submitted, therefore: (i) avoiding any duplication in the activities funded; (ii) capitalizing knowledge generated by each feasibility study or capacity building activity supported by one or another program; (iii) optimizing procurement and cost of consultancies hired to conduct such studies, and (iv) leveraging other donor resources to share the cost of such TC activities.

The proposed size of the TC envelopes has been defined based on (i) the investment and mitigation results intended; (ii) the obstacle that feasibility study costs pose to the viability or investment decision-making of some of these operations (particularly of those done by first movers, where costs and risks are higher and even more uncertain before such studies), and (iii) the cost-sharing estimates done vis-à-vis other sources of financing for these TC activities (including the TC resources proposed under the other CTF program).

In the case of the Colombia EE program, the mentioned synergies with the other programs will be effectively capitalized for the portion of the TC resources that will support feasibility studies and capacity building activities; this however will not be relevant for the portion of grant resources that will be used to buy down the cost of the facility management/operation, which is a specific need of this single project. It is of critical importance for its viability and explains the larger proportion of grant resources required.