



USAID
FROM THE AMERICAN PEOPLE

COLOMBIA

COLOMBIA CLEAN ENERGY PROGRAM

THIRD YEAR WORK PLAN

Revision November, 2014

This publication was produced for review by the United States Agency for International Development. It was prepared by the Colombia Clean Energy Program (Tetra Tech ES, prime contractor)

COLOMBIA CLEAN ENERGY PROGRAM

Third year work plan

Prepared for:

Office of Environment
USAID/Colombia

Prepared by:

Tetra Tech ES, Inc.
4601 North Fairfax Drive, Suite 601
Fairfax, VA 22203
www.tetratech.com

USAID Contract Number Contract AID-514-C-12-00002

Disclaimer

The views expressed in this publication do not necessary reflect the views of the United States Agency for International Development or the United States Government

TABLE OF CONTENTS

- 1. Introduction1**
 - 1.1 Objective of this document 1
 - 1.2 Program goals and objectives 1
 - 1.3 Scope of work 2

- 2. Work plan by task.....5**
 - 2.1 Task 1- Renewable energy and energy efficiency enabling environment and institutional capacity development 6
 - 2.1.1 Overall approach 6
 - 2.1.2 Planned activities under each subtask 7
 - 2.1.3 Gantt chart 22
 - 2.2 Task 2- Expanding access to renewable energy sources in currently unserved areas 24
 - 2.2.1 Overall approach 24
 - 2.2.2 Planned activities under each Work Stream 25
 - 2.2.3 Gantt chart 35
 - 2.3 Task 3 - Energy efficiency and renewable energy investment promotion 38
 - 2.3.1 Overall approach 38
 - 2.3.2 Planned activities under each Work Stream 44
 - 2.3.3 Gantt chart 53

- 3. CCEP’S Communications and Outreach Undertakings55**
 - 3.1.1 Consolidating communications distribution network 55
 - 3.1.2 Enhancing project visibility strategy 55
 - 3.1.3 Producing high-impact communication pieces and press coverage 56

FIGURES

Figure 1: CCEP's main tasks 2

Figure 2: CCEP's consolidated implementation vision 5

Figure 3: Task 1 Main work streams 7

Figure 4: Task 1 Projects Gantt chart 22

Figure 5: Task 2 Projects Gantt chart 35

Figure 6: Task 3. General Timeframework. Clean Energy Projects 40

Figure 7: Task 3 Project work coordination 41

Figure 8: Task 3 Projects Gantt chart 53

Tables

- Table 1 - Task 1 Work Stream 1 Activities 8
- Table 2 – Task 1 Work Stream 2 Activities 10
- Table 3 – Task 1 Work Stream 3 Activities 12
- Table 4 – Task 1 Work Stream 4 Activities 13
- Table 5 - Task 1 Work Stream 5 Activities 16
- Table 6 - Task 1 Work Stream 6 Activities 17
- Table 7 - Status of major Task 1 Activities –2014..... 19
- Table 8 - Task 2 Hybrid Systems under Design Using Homer Software 26
- Table 9 - Task 2 Work Stream 1 Activities 26
- Table 10 - Task 2 Projects Assured for Third Year Implementation..... 27
- Table 11 - Task 2 Work Stream 2 Activities 28
- Table 12 - Task 2. Work Stream 3. Activities 29
- Table 13 - Task 2 Work Stream 4 Activities 29
- Table 14 - Assured Task 2 Projects 2014 – 2015 30
- Table 15 - Task 2 Projects in Structuring for Near-Term Implementation..... 34
- Table 16 - Task 3 Industrial subsector and/or technology assessment 44
- Table 17 - Task 3 Work Stream 1 Activities 44
- Table 18 - Task 3 Work Stream 2 Activities 46
- Table 19 - Source of Financial Support..... 47
- Table 20 - Task 3 Work Stream 4 Activities 48
- Table 21 - Status of Task 3 Energy Efficiency Project Portfolio –2014..... 50

LIST OF ACRONYMS AND ABBREVIATIONS

ACIP	Afro-Colombian and Indigenous Program (USAID Program)
ADAM	Areas for Municipal Level – Alternative Development Program (Áreas de Desarrollo Alternativo Municipal - USAID Program)
ANDI	National Businessmen’s Association (Asociación Nacional de Empresarios de Colombia)
ANLA	National Environmental Licensing Agency (Agencia Nacional de Licenciamiento Ambiental)
APROTEC	Local renewable energy company
BIO-REDD	Reduced Emissions from Deforestation and Degradation (USAID Program)
CAF	Latin American Development Bank (Banco de Desarrollo de América Latina)
CCEP	Colombia Clean Energy Program (USAID Program)
CDM	Clean Development Mechanism
CE	Clean Energy
CELI	Consolidation and Enhanced Livelihoods Initiative (USAID Program)
CIDET	Corporation Center for Technological Research and Development of the Electrical Sector (Corporación Centro de Investigación y Desarrollo Tecnológico del Sector Eléctrico)
CNPMLTA	National Cleaner Production Center (Centro Nacional de Producción mas Limpia y Tecnologías Ambientales)
COP	Chief of Party
COR	Contracting Officer Representative
CP	Cleaner Production
CREG	Power and Gas Regulatory Commission (Comisión de Regulación de Energía y Gas)
DNP	National Planning Department (Departamento Nacional de Planeación)
DO	Development Objective
EC-LEDS	Enhancing Capacity for Low Emission Development Strategies
EE	Energy Efficiency
EPM	Empresas Públicas de Medellín
EPSA	Empresa de Energía del Pacífico
ESCO	Energy Service Company
FAER	Support Fund for Rural Electrification (Fondo de Asistencia a Electrificación Rural)
FAZNI	Support Fund for the Non-Interconnected Zones (Fondo de Apoyo Financiero para la Energización de las Zonas No Interconectadas)
FNR	National Royalty Fund (Fondo Nacional de Regalías)
GDP	Gross Domestic Product
GHG	Greenhouse Gases
GIS	Geographic Information System
GOC	Government of Colombia
IFC	International Finance Corporation (World Bank Group)
IPSE	Institute of Planning and Promotion of Energy Solutions in the ZNI (Instituto de Planificación y Promoción de Soluciones Energéticas para las ZNI)
IR	Intermediate Result
ISAGEN	Public private energy utility corporation

...

JBB	Bogota Botanical Garden (Jardin Botanico de Bogota Jose Celestino Mutis)
LCA	Life-Cycle Assessment
LEDS	Low Emission Development Strategies
M&E	Monitoring and Evaluation
MADR	Ministry of Agriculture and Rural Development (Ministerio de Agricultura y Desarrollo Rural)
MADS	Ministry of Environment and Sustainable Development (Ministerio de Ambiente y Desarrollo Sostenible)
MFI	Micro-finance institutions
MIDAS	Más Inversión para el Desarrollo Alternativo Sostenible (USAID Program)
MME	Ministry of Mines and Energy (Ministerio de Minas y Energía)
MRV	Monitoring, Reporting and Verification
NAMA	Nationally Appropriate Mitigation Actions
NGO	Non-Governmental Organization
O&M	Operation and Maintenance
OPIC	Overseas Private Investment Corporation
PPA	Public Private Alliance
PPF	Clean Energy Project Preparation Facility (known in Spanish as Mecanismo para la Estructuración de Proyectos de Energía Limpia – Clean Energy Project Structuring Mechanism)
PROURE	Program of Rational and Efficient Use of Energy and Other Forms of Non-Conventional Energy (Programa de Uso Racional y Eficiente de Energía y Fuentes No Convencionales)
RE	Renewable Energy
SRE	Sustainable Rural Energization
SME	Small and Medium Enterprises
SNSM	Sierra Nevada de Santa Marta
Tt	Tetra Tech (Prime Contractor)
UPME	Mining and Energy Planning Unit (Unidad de Planeación Minero Energética)
USAID	United States Agency for International Development
USAID DCA	Development Credit Authority
ZNI	Non-Interconnected Zones (Zonas no Interconectadas)

1. INTRODUCTION

1.1 OBJECTIVE OF THIS DOCUMENT

This third year work plan describes updates and changes to various aspects of CCEP's implementation strategy based on the experience and progress made as a result of the strategic repositioning envisioned in the second year work plan and subsequent contract modification approved in January 2014. The flexibility achieved through the contract modification allowed CCEP to focus on larger impact projects benefitting larger populations in Task 2 and more enterprises in Task 3, while at the same time persisting and managing to overcome the administrative and legal hurdles impeding implementation of major projects with GoC participation. Thus, CCEP finalizes its second year with a strong portfolio of projects under or nearing implementation, with required investments of over USD \$15M during its third year (three quarters leveraged).

The overall objective of this third year work plan is to focus efforts on achieving implementation of RE and EE investment projects already identified in the respective pipelines with particular focus on completing most by January 2016. According to current project implementation schedules, 95% of CCEP's Incentive Fund should have been committed and roughly 80 % disbursed by the end of the third year.

It is important to mention that this document reflects the current vision and approach to move CCEP investment projects forward based on current data and information which might be evolving during the actual implementation of the activities described in this document. As such, this document should be taken as the best guide for directing implementation activities with certain degree of flexibility to:

- Allow CCEP to add new opportunities (such as the highly visible project with CAEM, or the support required to pass the RE/EE Law 1715 which were not part of CCEP's approved second year work plan)
- Allow CCEP to react to unexpected roadblocks or impediments that could delay or completely derail the implementation of certain projects.

In terms of policy objectives, during the third year CCEP will focus its technical assistance efforts on the regulatory development of the RE/EE Law 1715 passed in May, 2014, the institutionalization of the PERS strategy and methodologies, the implementation of the PPF and the design of the next PROURE Action Plan.

1.2 PROGRAM GOALS AND OBJECTIVES

The Colombia Clean Energy Program (CCEP) is a 5-year (January 2012-January 2017) project designed to increase access to renewable energy sources and energy efficient practices in Colombia through a combination of project development support, technical assistance, and enabling environment reforms. CCEP is USAID/Colombia's flagship clean energy activity, funded under the Presidential Initiative on Climate Change. The overall goals of USAID's environment program are strengthening

environmental governance, low carbon growth, conservation of significant biodiversity, and support to adapt to climate change.

USAID’s Country Development Cooperation Strategy 2014-2018¹ for Colombia is in line with the U.S. Presidential Initiative for Global Climate Change. The Country Development Cooperation Strategy identifies four Development Objectives (DOs) to achieve the Mission’s higher level goal. These updated DOs are reflected in this work plan along with the necessary modifications introduced by USAID to associated indicators in the PMP. In this updated context, CCEP will directly advance the DO of “Environment resiliency and low-emissions development strengthened” which it is supported by the following three updated intermediate results (IR):

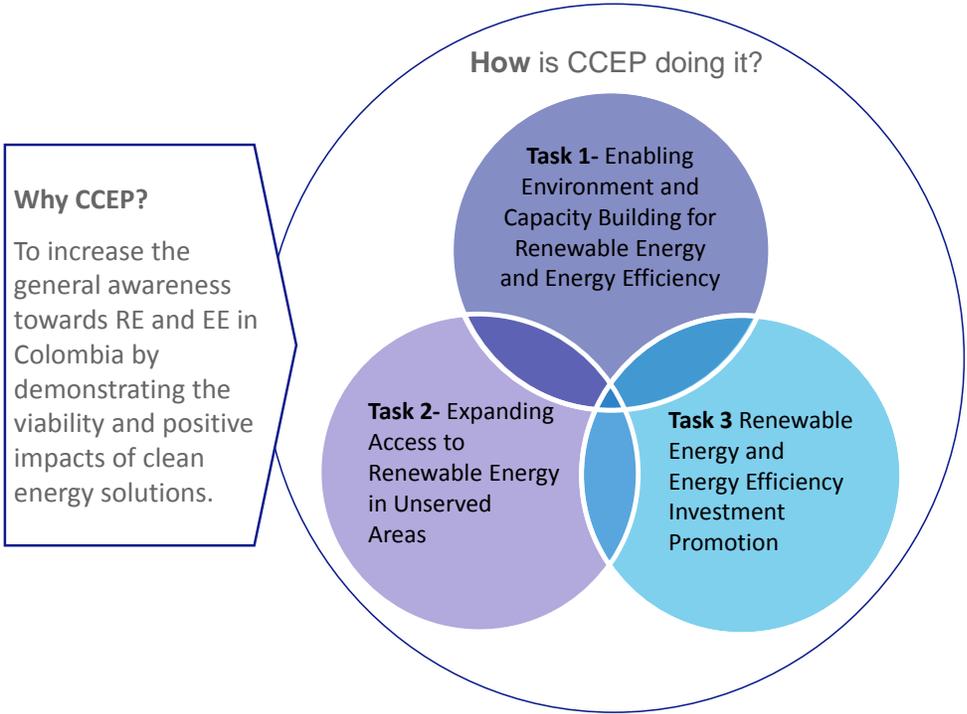
- IR. 4.1 – Natural Resource management improved
- IR 4.2 – Mitigation of greenhouse gas emissions increased
- IR 4.3 – Increased resilience to the consequences of a changing climate

CCEP will directly support Intermediate Result 4.2.

1.3 SCOPE OF WORK

CCEP continues to be articulated around three tasks as shown in Figure 1. Each task is summarized below.

Figure 1: CCEP's main tasks



¹ Country Development Cooperation Strategy 2014-2018, A Path to Peace, June 13, 2014

Task 1: Renewable energy and energy efficiency enabling environment and institutional capacity development. (IR 4.2 – Mitigation of greenhouse gas emissions increased). It continues working closely with the Ministry of Mines and Energy (MME), the Mining and Energy Planning Unit (UPME), the Institute of Planning and Promotion of Energy Solutions in the ZNI (IPSE), the Power and Gas Regulatory Commission (CREG) and other institutions to derive access and renewable energy targets, implement renewable programs in the ZNI and implement energy efficiency investment projects in targeted sectors. The approval and enactment of the new Renewable Energy and Energy Efficiency Law 1715 in May 2014, requires an important focus on issuing appropriate regulations to further develop the enabling environment under which both RE and EE projects can make a difference in the future development of the power sector in Colombia. This new law also provides the opportunity for CCEP to assist in the institutional design and start-up of new instances defined in the law (such as the new “Non Conventional Energy and Efficient Energy Management Fund – FENOGE”), and also will require a redesign of the role of IPSE in the energy sector and its strategic plan for the next 5 years.

Our work seeks to integrate ongoing GOC efforts by MME, UPME, IPSE, MADS, DNP, CREG and other national and regional institutions in the fields of EE and ER planning, policy and regulatory development; identify viable projects and provide capacity building across all technical areas, particularly regarding PROURE, LEDS, PERS, and strategic planning of the energy sector agencies; and Monitoring, Reporting and Verification (MRV) processes. Closely linking with Task 3, CCEP capacity building under Task 1 also focuses on stimulating private sector integration of EE and RE technologies and investment opportunities as standard practice by the business sector through assistance in the development and promotion of financial mechanisms in Colombia’s banking system, as well as additional stimulus through advisory support for the implementation of additional UPME’s initiatives including PROURE’s assistance in the design of energy efficiency goals for the transport sector and in developing alternative demand scenarios to be included in the Natural Gas Supply Plan and the PROURE’s Action Plan 2105-2020. In partnership with UPME, CCEP is also setting up a financial facilitation and promotion mechanism for clean energy investment projects, which will promote and support the implementation of energy efficiency projects in the industrial, transportation, commercial and service sectors, throughout pre investment, investment and monitoring and evaluation phases, seeking to generate a dynamic market for EE/RE investments in Colombia. Known in English as the Colombia Clean Energy Project Preparation Facility (PPF), in Spanish it has been adjusted to Mecanismo para la Estructuración de Proyectos de Energía Limpia (retaining PPF for its acronym in English).

Task 2: Expanding access to renewable energy sources in currently unserved areas. - (IR 4.2 – Mitigation of greenhouse gas emissions increased). Our main focus is to stimulate the development of RE projects through technical assistance to IPSE, UPME, other national and regional agencies and NGOs, and the implementation of a mix of projects that includes centralized energy systems (e.g., micro-hydro or hybrid solar/diesel) and distributed systems (e.g., stand-alone PV). Our approach focuses on supporting the entire renewable energy project cycle at the micro (concrete project) level: resource assessments and mapping, GIS tools for project identification and design, cost analysis, and transaction and financing support. We also recognize the need for strong community support for projects through outreach and education and are deploying participatory approaches to support productive energy use by rural communities. All CCEP renewable energy field projects focus on social, economic, technological and environmental sustainability encompassed in the concept of “sustainable rural energization” (SRE) and leverage institutional and financial support from national, regional and community actors.

Task 3: Energy efficiency and renewable energy investment promotion - (IR 4.2 – Mitigation of greenhouse gas emissions increased). To strengthen environmental resiliency and low-emissions development, USAID will support low carbon economic growth through increased investments in clean energy and low-emissions development. Through Task 3, CCEP has been promoting private sector investment in energy efficiency and renewable energy projects in key sectors, seeking to reduce 495,000 tons of CO₂e during the life cycle of the investments achieved. Projects supported are chosen not only for their direct contribution to emissions reduction, but for their demonstration and replication effect in specific subsectors, industrial corridors or cross-cutting technologies of broader impact.

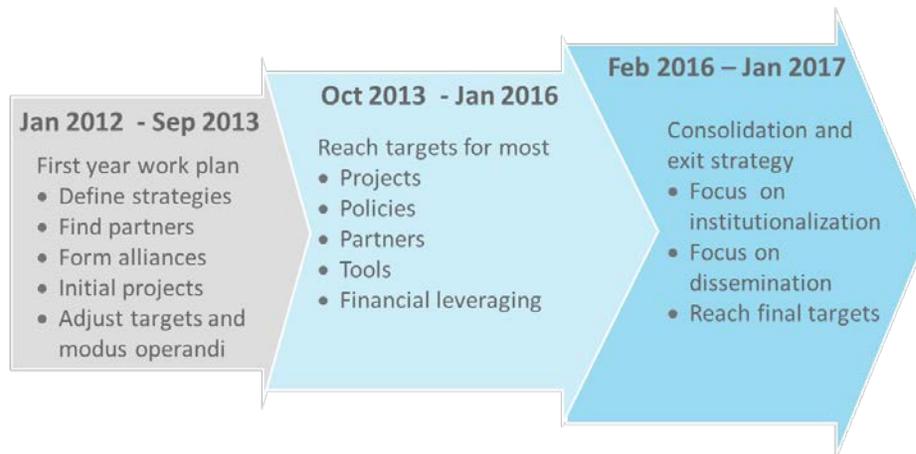
As a result of the strategic shift in focus during second year implementation, Task 3 has expanded its work from direct technical assistance and support to companies seeking to access existing financial mechanisms (such as the Environmental Credit Line – LCA²) and offering training and advisory services on existing mechanisms to financial institutions, industries and EE/RE project developers, to two other fronts. On a second front, CCEP expanded its focus to also work with energy service companies (ESCOS), which can directly structure and finance EE/RE projects through energy service contracts in companies otherwise unwilling or unable to invest their own resources outside their core businesses, seeking to increase the likelihood of actual EE/RE project implementation after study phases. In a third front, CCEP will also co-finance specific, low cost investments that have a high potential of greenhouse gas (GHG) emissions reduction, such as the incorporation of dosifiers for brick kilns and incorporation of modern burners to improve fuel consumption in boilers.

² This line includes debt remission of up to 25% of credit incurred if EE projects reach targeted energy savings and emissions reduction indicators.

2. WORK PLAN BY TASK

Based on the experience, lessons learned and progress made during the first two years, CCEP’s overarching implementation approach will remain much as planned in its strategic review in March 2013 and approved in its contract modification in January 2014. The immediate focus during year three is to carry out implementation activities of the RE and EE investment projects that are already in the pipeline with particular focus on assuring completion of most by early 2016. CCEP’s implementation vision remains as illustrated in Figure 2 where there are three main phases under which the implementation approach will continue to be carried out. The key message is that CCEP has been focusing and will continue to focus on implementing and reaching most of its targets by January 2016 in order to allow sufficient time for consolidating and carrying out an orderly exit strategy. This consolidation period will ensure widespread dissemination and institutionalization of methodologies (technical, community development, business models for rural energy service providers, etc.) during the last period of the program Feb 2016- Jan 2017.

Figure 2: CCEP's consolidated implementation vision



In order to achieve this, CCEP has geared up to accelerate the pace at which projects are brought to implementation and construction stage, since it is critical to the success of the Program to be able to demonstrate the viability and sustainability of clean energy solutions through concrete projects. This has required diversifying and strengthening alliances with public and private entities that have demonstrated capacity to deploy the resources necessary for efficient project structuring and implementation, and steer clear of projects requiring complex legal consultation and licensing procedures or excessive financial challenges – while at the same time persisting in overcoming institutional obstacles for the implementation of already structured projects, particularly those requiring expenditure GOC budget appropriations by end of 2014.

During the third year work plan CCEP will continue to use a “results-driven” approach to implement the scope of work. CCEP will complete the implementation of its existing portfolio of field projects identified based on the knowledge and experience of our local teams, while at the same time spurring projects by geographic or thematic cluster and/or with new partners identified during first two years of implementation.

The following sections describe the activities planned under each of CCEP’s three tasks during the third year and include Gantt charts per task showing the implementation schedule for all CCEP activities for the third year.

2.1 TASK 1- RENEWABLE ENERGY AND ENERGY EFFICIENCY ENABLING ENVIRONMENT AND INSTITUTIONAL CAPACITY DEVELOPMENT

2.1.1 Overall approach

This component seeks to enhance institutional capacity of the Ministry of Mines and Energy (MME) and related institutions to formulate and implement EE/RE projects, to promote policies to use public funds for sustainable rural energization and leverage private sector investment, and to strengthen the capacity of GOC to develop and implement clean energy and low emissions strategies. This component also entails raising public awareness on the technical options and socioeconomic benefits of clean energy paths.

During the third year, It will continue to work closely with MME, the Mining and Energy Planning Unit (UPME), the Institute of Planning and Promotion of Energy Solutions in the ZNI (IPSE) and other institutions to derive access and renewable energy targets, implement sustainable renewable energy programs in the ZNI, enable EE/RE investment in industry and other sectors and seek to overcome regulatory barriers to RE for the overall power sector, particularly by assisting the GOC in the implementation of the RE and EE law.

The primary objective of Task 1 is to assist Colombian public and private institutions to create an enabling environment and institutional capacity conducive to the development of renewable energy, energy efficiency projects and support the low emissions development strategy (LEDS).

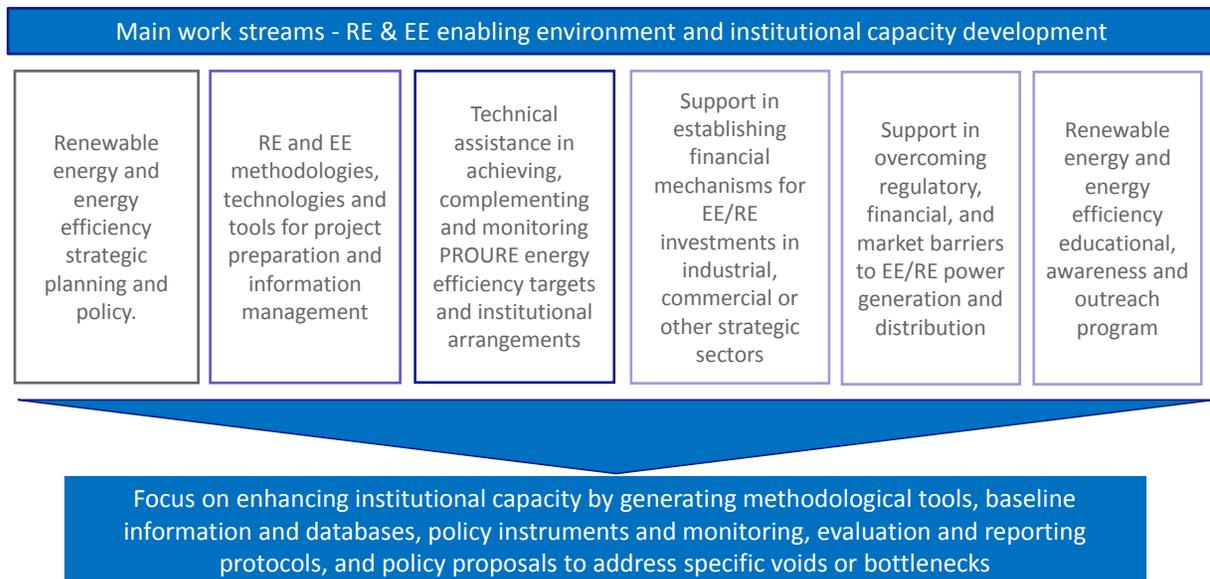
The approach under which third year activities will be carried out is illustrated in Figure 3. CCEP’s focus during the third year is on accelerating the implementation of identified work streams which include:

- Providing support to the MME in the design of some specific resolutions and policies, urgently needed within the new RE and EE regulatory framework.
- Provide assistance to IPSE, UPME and MME in the design of a national Sustainable Rural Energy Planning Strategy. This strategy will compile the lessons learned during the last 2 years work with the regional PERS and planning methodology assistance.
- Continuing supporting IPSE, UPME and CREG in the design and construction of geographic information systems (GIS), including web based geographic information (Geoportal), renewable energy resource maps and other technological tools for information management of technical and strategic value for energy planning and power service regulation in the ZNI.
- Providing technical assistance to UPME to design PROURE’s second Indicative Action Plan due in 2015, including the design of energy efficiency goals for the transport sector and the development of alternative demand scenarios incorporating efficient end-use technologies for the Natural Gas Supply Plan. CCEP will also provide technical assistance in identifying and designing appropriate institutional arrangements to promote PROURE implementation, such as possible Public Private Alliances (PPA) or the design and organization of the “Non- Conventional Energy and Efficient Energy Management Fund – FENOGE” created by the new EE/RE Law, and

developing Monitoring, Reporting and Verification (MRV) instruments to gauge accomplishment of PROURE’s 2015 and next phase targets (in support of MME and UPME).

- Supporting energy sector institutions in taking concrete actions to overcome regulatory and financial barriers that inhibit greater participation of Renewable Energy sources and Energy Efficiency investments.
- CCEP will continue to support and promote the establishment of financial vehicles and incentives to encourage private sector investment in energy efficiency and renewable energy technologies in specific industrial and commercial establishments, such as the “Clean Energy Project Preparation Facility (PPF)” to facilitate EE/RE investment project structuring.
- Expanding the renewable energy and energy efficiency education, awareness and outreach program focused on increasing general knowledge of clean energy applications and enabling different stakeholders and the public in general to have access to concrete demonstration and information on the benefits of these solutions. As more CCEP projects get implemented, this work front will interlace more tightly with our communications strategy, presented as a separate chapter in this work plan. The overall impact sought from these activities is to dissipate misconceptions related to EE/RE technology costs and efficiency in order to gain support of the public for efficient energy use and increased participation of RE in the energy basket.
- Continue facilitating the design and implementation of Task 2 and 3 projects, especially negotiating and supporting CCEP’s key public and private partners.

Figure 3: Task 1 Main work streams



2.1.2 Planned activities under each subtask

During its third year of implementation CCEP plans to focus on the activities described in this section using the above updated framework.

a. ***Work Stream 1.1 Renewable energy and energy efficiency strategic planning and policy***

CCEP will work with IPSE and MME in the development of an energy plan for the non-interconnected areas - PEZNI. This strategy might require redesigning the role of some MME institutions, specially IPSE, and the interactions of the central government with the regions.

At the same time, CCEP will continue supporting the implementation of the regional PERS, especially those under implementation, and providing methodological assistance to UPME in other departments. However, CCEP would not be directly involved in future regional agreements signed by UPME and the local entities.

CCEP will also contribute in the design of a national methodology that can be used by any regional authority and energy sector stakeholder, facilitating the flow of information and a nation-wide rural energy planning.

The main results and milestones of the specific activities under this work stream are presented in the following table.

Table 1 - Task 1 Work Stream 1 Activities

Activities Work Stream 1.1	Description
<p>Departmental Sustainable Rural Energization Plans PERS</p>	<p>Giving the results obtained by the first regional PERS in Nariño, CCEP will continue supporting the Tolima and Guajira projects until their completion. In the near future, CCEP would not be directly involved in the regional agreements signed by UPME and the local entities, but will continue providing technical assistance and logistical support to them through a MOU under development with UPME. This MOU is necessary for UPME to be able to make reference to CCEP's technical assistance as part of its support for oncoming PERS. The PERS consist of a replicable set of rural and renewable energy planning, policy-making, project evaluation and development methodologies, as well as technological tools for information management by integrating, updating and modernizing ZNI information systems to be shared among UPME, IPSE and local actors.</p> <p>Main Results: A rural renewable energy planning methodology including project evaluation and development approaches, and technological tools for information management and policy making at regional and national levels.</p> <p>Milestone 1- November 2014, Signing of a general agreement between UPME and CCEP to provide technical and logistical support to UPME in its commitments for the development of new Departmental Sustainable Rural Energization Plans - PERS.</p> <p>Milestone 2- March 2015 completion of the Tolima and Guajira PERS.</p> <p>Milestone 3- May 2015 recollection of the regional information and lessons learned of the Nariño, Guajira and Tolima PERS, to provide technical inputs in the design of the national methodology.</p> <p>Milestone 4- August 2015 report on lessons learned and feedback to the national PERS methodology on the basis of additional regional PERS supported by UPME with CCEP technical assistance during 2015 – foreseeably Choco and Cundinamarca.</p>
<p>National methodology to structure sustainable rural energization plans</p>	<p>Development of a national methodology to serve as reference in the design of regional PERS and secure exchange of experiences and information among the regions, UPME and IPSE. This methodology will collect information and lessons learned during the implementation of the Nariño, Tolima and Guajira PERS, and</p>

Activities Work Stream 1.1	Description
	<p>take advantage of the innovations and difficulties encountered during the implementation.</p> <p>Main Results: Support the development of a nation-wide rural energy planning methodology to facilitate the application of Article 34 .Hybrid solutions of the Law 1715 of 2014 that states that financial funds for hybrid solutions in the Non Interconnected Areas "will be given to projects incorporated within Sustainable Rural Energization Plans at departmental and/or regional levels, with the goal of stimulating the methodology developed for this purpose".</p> <p>Milestone 2-October 2014, Revision of UPME 's methodology first draft.</p> <p>Milestone 2: February 2015, Finalize and incorporate CCEP 's technical annexes to UPME's methodology.</p> <p>Milestone 3: September 2015. Final version and publication of the methodology.</p>
<p>Energy plan for the Non interconnected areas - PEZNI</p>	<p>IPSE requires defining a ZNI energization strategy to be incorporated by decree or resolution as part of the regulatory development of Law 1715 of 2014 "To Regulate the Integration of Non-Conventional Renewable Energies into the National Energy System". This objective represents an important opportunity for CCEP 's involvement in the future strategy of Colombia 's intervention in the Non Interconnected Areas. Therefore, CCEP agreed to support IPSE in the following activities: analysis of IPSE 's current policies, development of a ZNI socioeconomic context, definition of the needed regulatory schemes and energy market, and definition of policy guidelines to prioritize investments in the ZNI.</p> <p>Main Results: Support the development of the ZNI energization strategy, including policy guidelines, targets and goals within a wider regulatory and socioeconomic context, and improving the current expansion plan and investments. This initiative will also create a monitoring and evaluation scheme.</p> <p>Milestone 1 – November 2014, Signing and extension of the agreement between IPSE and CCEP to include the development of PEZNI, to facilitate IPSE 's execution of the resources allotted to PEZNI</p> <p>Milestone 2 – April 2015, Strategic Energization Plan for ZNI document and roadmap for its implementation.</p>

b. Work Stream 1.2 Design and implement Renewable Energy and Energy Efficiency methodologies, technologies and tools to facilitate the project preparation and information management processes

During the last two years, CCEP has obtained valuable information concerning energy demand and supply, renewable energy sources, costs of the different sources of energy per region, and characterization of certain villages and communities that are too small to be registered in the national data bases. This information has been contrasted with information collected by UPME and IPSE. The challenge for the coming years will be to finalize CCEP's data compilation and unify the different GOC

information systems, to transfer all results and responsibility for upkeeping and updating tools and information to GOC agencies during CCEP’s fourth year.

During the third year, CCEP will focus on finalizing the renewable energy sources mapping, unifying the population centers in a geodatabase, georeferencing the RE information, complete the data compilation through the regional PERS, and continue providing training in the microgrid modeling software HOMER.

The following activities are expected to be carried out during CCEP’s third year work plan:

Table 2 – Task 1 Work Stream 2 Activities

Activities Work Stream 1.2	Description
<p>Renewable energy sources mapping</p>	<p>CCEP rehired WESTEVA during the second year, after the initial consultancy for the Energy and Gas Regulatory Commission CREG to determine the levelized cost of energy (LCOE) in COP/kWhr, to integrate with our GIS expert the wind and solar data bases in the GOC information Platform, and also train GOC officials in the use of microgrid modeling software HOMER. The information has been debugged, but still requires to be incorporated in the GOC’s and CCEP’s Platform and include other sources of information including the hydro and biomass data recollection and organization.</p> <p>Main results: Developing a comprehensive RE source mapping.</p> <p>Milestone 1- December 2014 incorporate the wind and solar maps generated by WESTEVA in CCEP’s Information System (Server) and make the resulting geodatabase available to GOC.</p> <p>Milestone 2- April 2015 Technical workshop with UPME, IPSE, MME, IGAC, IDEAM and Westeva to present, compare and design a work plan to integrate RE mapping results on a common platform. Further milestones for this activity would result from the workshop</p>
<p>Integrated information about population centers</p>	<p>Throughout the second year, CCEP’s GIS expert supported UPME in developing a methodology to filter, integrate and update separate information systems developed by UPME, IPSE, DANE, regional power companies, etc., into a unified geo-referenced database on population centers lacking energy services. This methodology has been circulated among the pertinent institutional work groups and partially implemented at UPME, but still requires a final round of discussions and adjustments for final adoption as a national guideline.</p> <p>Main results: Unify the points of the population centers in a geodatabase taking information from the data base: "Areas in need of electric power service - ANESSEE" as an input for UPME’s planning activities.</p> <p>Milestone 1- October 2014, Review and adjust the unification proposal presented by CCEP with UPME, IPSE and other pertinent technical institution.</p> <p>Milestone 2- April 2015 create the the procedures for information exchange and unification.</p> <p>Milestone 3. June 2015 Provide support to UPME to publish the final methodology and results of its application</p>
<p>GIS support</p>	<p>CCEP has participated actively in establishing the methodologies and geo-referenced datasets for rural energy planning and project design in the framework of</p>

Activities Work Stream 1.2	Description
	<p>the different PERS and will continue to support GIS platform design and implementation.</p> <p>Main results: Develop regional geo-referenced energy market datasets.</p> <p>Milestone 1- November 2014, ensure that the three regional PERS system databases are working properly and exchanging information.</p> <p>Milestone 2- April 2015. Assist in the integration of the geodatabases developed by the regional PERS projects completed the previous month in that national PERS GIS.</p>
<p>HOMER Modeling</p>	<p>After the training in HOMER, CCEP and some of the GOC officials have undertaken modeling exercises in the Non-Interconnected Areas (ZNI), as well as training on use of the methodology to develop project portfolios in the regional PERS. CCEP plans to continue providing assistance in some specific projects, especially those aimed to provide energy to the 39 Cabeceras Municipales of the ZNI or to design and implement hybrid solutions jointly with partner power companies such as EPM and EPSA:</p> <p>Main results: Strengthening GOC's and power sector's Homer modeling capacity to facilitate the design of hybrid solution for small and medium size communities.</p> <p>Milestone 1- November 2014. Specific hybrid projects modeled and designed for investment in the ZNI using the Homer tool together with IPSE, EPM and EPSA</p> <p>Milestone 2- December 2014. Projects derived from PERS Tolima and Guajira are designed using the HOMER tool.</p> <p>Milestone 3- May 2015. Integrate the tool in the National methodology to structure sustainable rural energization plans</p>

c. Work Stream 1.3 Technical assistance in achieving, complementing and monitoring PROURE energy efficiency targets

During the last year, CCEP supported UPME with studies and assessments of the 2010-2015 PROURE's Action Plan, including: a monitoring and evaluation scheme to determine the progress and achievements of PROURE's Indicative Action Plan 2010-2015, evaluating its progress and achievements, and issuing recommendations for Energy Efficiency in Colombia under the Indicative Action Plan PROURE. CCEP also finalized its role in the successful design and roll out of the EE/RE tax incentive resolution 563 of December 2012, which not only generated a portfolio of over USD \$400M in private sector investments and requests for USD \$92M in tax incentives during 2013, but also proved the most effective institutional mechanism to achieve 2010-2015 PROURE targets and helped paved the way to rethinking the approach to the next Action Plan.

This year UPME is focusing on the design of the PROURE 2016-2020 Action Plan. In order to comply with this purpose, UPME has requested assistance of CCEP to support the evaluation and analysis of the two major new aspects prioritized in the next Action Plan: 1) A technical and economic assessment of possible demand scenarios for natural gas, incorporating EE measures for gas consumption; and 2) EE goals for the transportation sector including: market segmentation, structure

of urban freight in targeted metropolitan areas, the study of technologies with their projection models, and the structure of energy demand.

The main results and milestones of the specific activities under this work stream are presented in the following table.

Table 3 – Task 1 Work Stream 3 Activities

Activities Work Stream 1.3	Description
<p>Assist the GOC in the evaluation and analysis of major aspects identified for the PROURE 2016-2020 Action Plan</p>	<p>Following CCEP's year two PROURE analysis and recent energy market studies by UPME, the GOC prioritized in its PROURE strategy two new EE objectives that should have a significant impact on the availability and costs of energy in Colombia. These major objectives, which are part of the coming PROURE Action Plan, focus on curtailing inefficient use of natural gas, and on formulating effective energy efficiency measures to curtail inefficient fossil fuel use in the transportation. The GOC's strategy in energy efficiency requires a comprehensive analysis of the transportation sector and formulation of effective measures to curtail inefficient fossil fuel use in the sector. Natural gas supply in Colombia is restricted and consumption has increased during the last decade. Policy makers are concerned about possible deficit risks scenarios in the next years. A shortage in the supply of natural gas will surely increase the prices of one of the most important energy sources for the Colombian economy. On the other hand, since the year 2000, the energy consumption tendency in Colombia has shown a considerable increase in the participation of transportation in the overall energy demand (according to UPME it has increased from 33% in 2000 to 44% in 2012).</p> <p>Main results: Perform a technical and economic assessment of possible demand scenarios for natural gas and possible measures to curtail inefficient use of this energy source, and assist UPME in defining energy efficiency goals and strategies for the transportation sector as part of the formulation of the next PROURE Action Plan.</p> <p>Milestone 1- November 2014 Modeling scenarios for reducing consumption of natural gas by economic sector and reducing fossil fuel intensity in the transportation sector . Definition and screening of scenarios of demand for natural gas by economic sector and alternative energy demand patterns in transportation based on economic, market and technological factors for the next twenty years.</p> <p>Milestone 2- February 2015. Policy proposals aimed at curtailing growth in the consumption of natural gas in the economy and of fossil fuels in urban, metropolitan and inter-urban transportation, under the next Action Plan for the Program of the Rational and Efficient Use of Energy and Conventional Sources -PROURE 2016-2020.</p> <p>Milestone 3- Abril 2015. Final Report. Summary of the most significant results of the technical and economic modeling scenarios and policy recommendations for efficient use of natural gas in the Colombian economy to be incorporated into the PROURE 2016-2020 Action Plan.</p> <p>Milestone 4- June 2015 Final Report. Summary of the most significant results of the energy efficiency strategy and goals for the transportation sector to be incorporated into the PROURE 2016-2020 Action Plan.</p>

d. Work Stream 1.4 Support in establishing financial mechanisms for EE/RE investments in industrial, commercial or other strategic sectors

As part of CCEP activities directed to create a policy and market enabling environment, the Program has worked during the last 2 years structuring a technical, commercial and financial assistance mechanism to promote and facilitate private sector investment in concrete EE/RE projects requiring additional engineering design and financial structuring to achieve “financial closure”, funding and final implementation.

CCEP’s “Clean Energy Project Preparation Facility-PPF”, whose overall concept is to co-finance and assist companies to overcome the technical, commercial and financial barriers to Energy Efficiency investments, has found an important ally in UPME. CCEP and UPME recently signed a USD \$685,000 agreement to cofinance studies already identified from a pipeline of more than 100 project profiles submitted by businesses to CCEP, the UPME/ANDI alliance, or identified by the recently finished industrial energy use characterization study financed by UPME in ten key International Standard Industrial Classification (ISIC) sectors. In the third year CCEP will focus on initially propelling the most stimulating projects which can be completed from that specific pipeline within CCEP’s implementation timeframe. The general management and policy directives of the PPF will continue to fall under CCEP’s Task 1 – in direct partnership with UPME –, but individual project development will form part of Task 3’s portfolio.

The following activities are expected to be carried out regarding the PPF during CCEP’s third year work plan:

Table 4 – Task 1 Work Stream 4 Activities

Activities Work Stream 1.4	Description
<p>Financial mechanisms for EE/RE investment</p>	<p>CCEP worked on the idea of creating an EE pre investment fund since the first year of operations when Task 1’s team and financial consultants started negotiations with possible public and private partners, and designed a preliminary administrative and legal structure. However, after different approaches with various stakeholders, CCEP realized that the international and national banks and investment funds, had always a vested interest in the possible future investments, so their proposed contributions were always conditioned to those needs. In order to guarantee a truly independent mechanism, more interested in overcoming barriers and drawing lessons for future initiatives than making profit out of the mechanism, CCEP decided to partner only with UPME and immediately start co financing projects already identified by the GOC and CCEP, without waiting for additional funding, partners or institutional designs.</p> <p>Main results: Creation of a transitional PPF financial mechanism to promote private sector investment in EE/RE.</p> <p>Milestone 1– September 2014. Signed an agreement with UPME where UPME commits COP \$600 million from its 2014 investment budget and CCEP COP\$700 million, for immediate implementation.</p> <p>Milestone 2– October 2014. Complete all operational and governance procedures and start PPF operations</p> <p>Milestone 3– December 2014. Co-financing the first COP\$600 million in a diversified portfolio of industries and sectors.</p>

Activities Work Stream 1.4	Description
	<p>Milestone 4– June 2015. Interim report on PPF results to date and guidelines for future institutionalization.</p> <p>Milestone 5– September 2015. Unless additional resources are added by UPME and CCEP to enlarge and continue operations, finalize PPF co-financing and draw lessons learned for future investments</p>

e. *Work Stream 1.5 Support the GOC in the design of policies that will favor overcoming regulatory, financial and market barriers to EE/RE power generation, distribution and use*

During the first year, almost every academic, public, private or international initiative seeking to promote renewable energy and energy efficiency in Colombia stumbled across numerous legal and regulatory barriers impeding almost any progress in their achievement. In response, our second year work plan included a work stream on “Transaction support to development of large scale RE power generation projects for the National Interconnected System (SIN)” in support of RE projects being identified and structured by private sector energy companies (such as CELSIA, ISAGEN and ENEL Green Power – EGP) or spurred by multilateral banks such as IADB. Given the existing and foreseeable regulatory climate, at the time of designing the second year work plan, CCEP and these counterpart teams envisioned supporting only sub-optimal, lower than 20 MW solar, wind or hybrid projects.

However, in the course of CCEP’s second year, the “institutional climate” towards removal of obstacles to RE and hybrid generation, distributed energy, smart grids, net metering and other contemporary international power sector options rapidly changed, and the counterpart groups put their projects, for the most part, “on hold” while new rules emerged. The imminence of passage and final enactment of the RE/EE Law 1715 paved the way for the removal of most major legal and regulatory barriers. On a more technical front, the process of formulating the new methodology for setting electricity tariffs in the ZNI through the regulatory authority CREG, as well as work by UPME and international consultants modeling wind resource complementarity with hydrological events, allowed CREG to find the economic rationale to include renewable energy resources within its power sector domain.

During our third year, CCEP will shift focus of this work stream to providing assistance to the MME, IPSE and CREG in tackling some of the main issues and designing some of the key resolutions and policies to be urgently implemented as a result of Law 1715 of 2014 "To Regulate the Integration of Non-Conventional Renewable Energies into the National Energy System", aimed to overcome legal, regulatory and financial barriers to integration of renewable energies in the SIN.

Regarding interactions with power sector companies, work has primarily shifted to developing specific joint smaller scale RE and hybrid projects for municipal seats and other localities in the ZNI with IPSE, CELSIA/EPSA and EPM under Task 2. As for Enel Green Power, it is currently evaluating a strictly private-sector hybrid 10 MW solar/biomass project in La Primavera, Vichada, based on a 30,000-hectare forest plantation and, for the moment, does not require CCEP assistance. CCEP’s specific activities that will be developed during the third year are described below.

Regarding other obstacles to RE penetration, CCEP has also detected needs and possibilities of market development with regards to RE technologies of considerably broader potential benefit to rural households and climate change mitigation, particularly regarding efficient woodstoves and solar lamps. Therefore, during the third year this work stream will incorporate macro level market studies, policy analysis and market development strategies to overcome additional market barriers to EE/RE technologies.

During its second year, CCEP interacted with a growing number of GOC agencies, international organizations and NGOs that have gained interest and committed efforts recently to generating conditions for widespread dissemination of efficient woodstoves in Colombia, and indeed has included efficient wood stoves and wood plots in some of its rural energy projects. The MADS is launching a National (Efficient Wood) Stove Program and CCEP plans to support this program with technical expertise, contacts and suggestions; but until this program matures and national strategies arise, will refrain from directly undertaking or sponsoring market development activities for these technologies. Meantime, CCEP will focus on solar lamps.

During the course of numerous field visits, community meetings and institutional discussions in off-grid areas, CCEP has come to the conclusion that basic needs for night lighting and cell phone charging, which have become standard communications options for rural society even in the most remote areas, can be met with simple devices known as solar pico lights. While this technology is sufficiently low-cost to be affordable by rural households, commercial distribution and market development is extremely limited. On the one hand, companies and distributors of solar technology prefer to commercialize larger, higher-cost, higher-profit photovoltaic systems, accessible only to higher-income populations and institutional programs in off-grid areas. On the other, the distribution costs of reaching isolated rural markets present a challenge. Nonetheless, wherever a pico light is shown to isolated rural populations, everyone wants one and proposes ways to afford it – including swapping for goats, handicrafts or other local products.

This is a typical case of surmountable market barriers, and the challenge to CCEP is finding strategies and mechanisms to removing such barriers to stimulate the creation of a market and enable widespread dissemination of this affordable technology. Hybrytec, a company dedicated to the design, marketing and installation of solar and thermal energy solutions, presented an idea to develop a commercial distribution system for low-cost pico lights. Even though the idea was very innovative and had the potential to provide lighting and communications access thus improving the quality of life of over 32,000 individuals, the initial proposal was discarded by CCEP because it presented several inconsistencies and included significant operative expenses. Similar, if less articulated ideas, have been proposed to CCEP by Arhuaco indigenous authorities and Corpocesar for communities in the Sierra Nevada de Santa Marta and by Cerrejon Foundation (FCGI) for Wayuu communities in La Guajira. In addition to providing simple solutions to lighting and cell phone needs, these organizations also view the rechargeable solar lamps as a solution to battery disposition, since wasted batteries strewn throughout these ecosystems has environmental and indigenous authorities quite concerned.

This year, therefore, CCEP will commission market studies and marketing trials to test business models options in indigenous and peasant communities of the Sierra Nevada de Santa Marta and Guajira where the advantage of pico lights for large numbers of disperse households as well as institutional and commercialization stakeholders have been detected.

Table 5 - Task 1 Work Stream 5 Activities

Activities Work Stream 1.5	Description
<p>Assist the GOC in the design of some of the regulations required by Law 1715 of 2014</p>	<p>The GOC requested CCEP's support in developing regulations regarding two specific technical areas: the modernization and unification of RETILAP (a regulatory and technical standard related to decorative illumination, incandescent light bulbs, and the content of mercury and lead in public illumination sources, among others); and the technical regulation to institutionalize the incorporation of excess power from self-generation into the national grid, in order to comply with the 12-month period mandated by the Law 1715 of 2014.</p> <p>Main Results: Support the redesign of the RETILAP and the technical regulation to institutionalize the incorporation of surplus RE power in the grid</p> <p>Milestone 1-December 2014, Consultancy hired and revision of the information, inputs and updates collected by the MME, CREG and other energy sector institutions.</p> <p>Milestone 2: April 2015, Delivery of the study including suggestions to upgrade the current RETILAP standard.</p> <p>Milestone 3: May 2015, Delivery of the study consolidating the parameters for the operation of small-scaled solar, wind and hydro generators, focusing on aspects such as setting the maximum power limit and guaranteeing the stability and quality standards of the energy fed into the national grid.</p>
<p>Design a pico light market study and perform market trials to contribute to the contract's expected result regarding "Sustainable business models developed and implemented for rural renewable energy systems"</p>	<p>During recent months, Hybrytec, the <i>Fundacion de Investigaciones Arqueologicas y Ambientales Tayrona</i> and the Global Heritage Fund, an NGO with over 15 years of work experience with the indigenous communities in the area of influence of "Ciudad Perdida" archeological park of La Sierra Nevada de Santa Marta, presented an idea to implement a market trial and analysis which would provide concrete information in order to operate a sales and distribution business model for pico light systems and develop a market for this type of technologies in remote areas. Similar market studies and trials can be developed in parallel or tandem with implementation of Task 2 projects in Guajira and other SNSM localities.</p> <p>Main results: Implement a market study and trial to provide concrete information to create a pico light systems market in La Sierra Nevada de Santa Marta, La Guajira and other remote areas.</p> <p>Milestone 1 April 2015: Complete the initial trial project including: the distribution scheme, sales and payment systems (monetary and in kind), specific information that allows scaling up the model to different parts of the country; and lessons learned after distributing 300 lamps through the GHF study.</p> <p>Milestone 2 June 2015: Complete one or two additional market studies and trials in parallel or tandem with other CCEP projects in the SNSM and La Guajira – such as PERS Guajira, FCGI water pumping, Palmor and Sabana de Crespo MCHS, etc.</p> <p>Milestone 3 August 2015. Evaluate the applicability of results and lessons learned from these studies and trials to other regions of the country, or whether to sponsor further trials in the Pacific coast or other regions.</p> <p>Milestone 4 September 2015. Design a project or mechanism to create an extensive distribution system to provide access to the general population of la Sierra Nevada de Santa Marta and La Guajira.</p>

f. Work Stream 1.6 Renewable energy and energy efficiency educational, awareness and outreach program

RE and EE educational and outreach efforts are an integral part of the CCEP work plan, aimed at gaining policymakers', business sectors' and other general public support for clean energy development paths, fundamental for being able to implement necessary regulatory and policy changes favorable to clean energy solutions and for eliciting behavioral change conducive to a wider adoption of clean energies. CCEP acknowledges the importance of demonstrating the viability of clean energy solutions and has therefore decided to carry out certain iconic projects whose main goal is to educate not only the general public and future generations, but whose impact will reach GOC officials and leaders by setting an example as to the kind of effective and efficient clean energy solutions that are feasible and could be implemented in Colombia. CCEP is also aware of the importance of communicating and increasing the awareness of clean energy options to Colombia's energy sector and GOC through its participation in different events, campaigns, concerts, publications, conference and symposia. For this reason, a new communications strategy is presented in a separate chapter of this work plan.

The main activities to be carried out during the third year are described below including expected main results and milestones.

Table 6 - Task 1 Work Stream 6 Activities

Activities Work Stream 1.6	Description
RE and EE educational projects	<p>CCEP started implementation of a series of RE systems to be deployed in the Bogota Botanical Garden. This educational activity will demonstrate the different uses and benefits of several types of RE systems. The project will include an ecological and interactive waking path with hand-on displays to educate visitors on clean energy opportunities and solutions and explain the benefits of clean energy solutions right in the middle of the capital city. During the last year, CCEP installed the solar photovoltaic system for the pergola, and the two gasifiers were already shipped to Bogota from California. The Botanical Garden already constructed and made the physical adjustments in the site where the biomass gasifiers, solar dryers and larger solar photovoltaic system for grid-tied power generation will be installed.</p> <p>Main results: Design and implement three RE systems at the Bogotá Botanical Garden, including an ecological and interactive waking path with hand-on displays to educate visitors on clean energy opportunities and solutions.</p> <p>Milestone 1 November 2014: Complete installation of two 20 kW gasifier units using biomass residues from the Garden's tree trimming that would supply approximately 30% of its daily power demand.</p> <p>Milestone 2 November 2014: Implementation, supply and installation of a solar system to be interconnected to the water cycle system.</p> <p>Milestone 4 January 2015: Test, deliver / transfer RE systems</p>

g. Specific project status and implementation plan of selected projects

A brief synopsis of Task 1's project pipeline, implementation status and pending steps for moving forward rapidly as of August 2014 is presented in the following table, which serves to illustrate the

progress made, challenges confronted, steps taken to complete them in the shortest time possible and shifts in strategy proposed for second year work.

Table 7 - Status of major Task 1 Activities –2014

Project	Description	Main Results	Implementation Stage	Milestone 1	Milestone 2	Milestone 3	Milestone 4	Milestone 5
Colombia Clean Energy Project Preparation Facility	CCEP's Project Preparation Facility (PPF) is a fund that would finance part of the detailed engineering studies necessary for an informed decision-making process regarding investments in energy efficiency and renewable energy projects. CCEP decided to initially partner with UPME to create an EE pre investment fund and start co financing projects already identify by the GOC and CCEP.	Creation of a transitional PPF financial mechanism to promote private sector investment in EE/RE.	Implementation	Sep 2014. UPME-CCEP Agreement	Oct 2014. Complete all operational and governance procedures and start PPF operations	Dec 2014. Co-financing the first COP\$600 million in a diversified portfolio of industries and sectors.	June 2015. Interim report on PPF results to date and guidelines for future institutionalization	Sept 2015. Finalize PPF co-financing and draw lessons learn
Departmental Sustainable Rural Energization Plans PERS	PERS consist of a replicable set of rural and renewable energy planning, policy-making, project evaluation and development methodologies, as well as technological tools for information management by integrating, updating and modernizing ZNI information systems to be shared among UPME, IPSE and local actors.	Rural renewable energy planning methodologies including project evaluation and development approaches, and technological tools for information management and policy making at regional and national levels.	Implementation	Nov 2014, UPME-CCEP Agreement	March 2015 completion of the Tolima and Guajira PERS	May 2015 recollection of the information and lessons learned from 3 PERS and provide technical inputs in the design of the national methodology	Aug 2015 Report on technical assistance provided to additional PERS projects sponsored by UPME in 2015 with recommendations to adjust national PERS publication	
National methodology to structure sustainable rural energization plans	Development of a national methodology to serve as reference in the design of regional PERS and secure exchange of experiences and information among the regions,	Support the development of a nation-wide rural energy planning methodology to facilitate the application of Article 34. Hybrid solutions of the Law 1715 of 2014	Design	Oct 2014, Revision of UPME's methodology first draft.	Feb. 2015, CCEP's technical annexes	Sept. 2015 Final version and publication of methodology agreed by		

Project	Description	Main Results	Implementation Stage	Milestone 1	Milestone 2	Milestone 3	Milestone 4	Milestone 5
	UPME and IPSE.					the two parties.		
Energy plan for the non interconnected areas – PEZNI	Define a ZNI energization strategy to be incorporated by decree or resolution as part of the regulatory development of Law 1715 of 2014 "To Regulate the Integration of Non-Conventional Renewable Energies into the National Energy System"	Support the development of the ZNI energization strategy, including policy guidelines, targets and goals within a wider regulatory and socioeconomic context, and improving the current expansion plan and investments.	Design	Nov. 2014, IPSE - CCEP Agreement	April 2015, Strategic Energization Plan for ZNI document and roadmap for its implementation.			
Regulatory Development of the Law 175 of 2014.	Contribute to the regulation of two specific technical policies: the modernization and unification of RETILAP (a regulatory and technical standard); and the technical regulation to institutionalize the incorporation of excess power for self-generation in to national grid	Technical regulations for RETILAP and the incorporation of excess RE power in to national grid	Design	Dec.. 2014, Revision of the information inputs and updates collected by the GOC.	April 2015, Delivery of the study to upgrade the current RETILAP standard.	May 2015, Study of the parameters for the operation of small-scaled RE generators, focusing on setting the maximum power limit and stability and quality to feed the national grid.		
Assistance in the evaluation and analysis of major aspects for the PROURE 2016-2020 Action Plan	Perform a technical and economic assessment of natural gas demand scenarios and possible measures to curtail inefficient use of this resource and assist UPME in defining energy efficiency goals for the transportation sector as part of the formulation of the next	Technical economic models projecting energy demand scenarios and policies to curtail inefficient consumption of natural gas in the economy and of fossil fuels in the transportation sector.	Implementation	Nov. 2014 Modeling scenarios for reducing consumption of natural gas, and curbing fossil fuel demand	Feb. 2015. Proposals aimed at reducing the consumption growth rates of natural gas in the economy and	Abril 2015. Final Report. Summary of the most significant results and policy recommendations for	June 2015. Final report with summary of most significant results of the energy efficiency	

Project	Description	Main Results	Implementation Stage	Milestone 1	Milestone 2	Milestone 3	Milestone 4	Milestone 5
	PROURE Action Plan			in the transport-ation sector	of fossil fuels in the transport-ation sector	efficient use of natural gas in the Colombian economy	strategy and goals for the transport-ation sector	
Educational & Demonstrative RE Project for the Bogota Botanical Garden	Demonstrate the different uses and benefits of several types of RE systems. The project will include an ecological and interactive waking path with hand-on displays to educate visitors on clean energy opportunities and solutions and explain the benefits of clean energy solutions right in the middle of the capital city.	Design and implement three RE systems at the Bogotá Botanical Garden, including an ecological and interactive waking path with hand-on displays to educate visitors on clean energy opportunities and solutions.	Implementation	Nov. 2014: Complete installation of a 40 kW gasifiers.	Nov. 2014: Installation of a solar system to be intercom-nected to the water cycle system.	Jan. 2015: Test, deliver / transfer RE systems		
Pico light market study and trials	Perform market studies and test trials to provide information on business models for pico light systems market development	Implement one to three market studies including test trials to provide concrete information to create a pico light systems market in La Sierra Nevada de Santa Marta, La Guajira and other remote areas.	Design	Apr 2015: Complete the initial pilot project.	Jun 2015: Complete one or two additional pilot studies in SNSM and La Guajira	Aug. 2015: Evaluation replicability of lessons learned to other regions of Colombia	Sep. 2015. Design a project to create an extensive distribution system.	

2.1.3 Gantt chart

Figure 4: Task 1 Projects Gantt chart

Task 1 - Projects Activities	Sep-14	Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15
	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
Departmental Sustainable Rural Energization Plans PERS																
General agreement between UPME and CCEP																
Completion of PERS Tolima & Guajira																
Inputs and lessons learned of the regional PERS.																
National Methodology to Structure Sustainable Rural Energization																
Revision of UPME's methodology																
CCEP draft propossal																
Methodology																
Energy Plan For the Non Interconnected Areas - PEZNI																
Agreement CCEP - IPSE																
Energy Plan for the ZNI and roadmap to implementation																
Parameters of RE generation to feed the national grid																
Law 175 of 2014. Law Implementation																
Information Review																
RETILAP study																
Technical regulation to institucionalize the incorporation of surplus																
Renewable Energy Resource mapping																
Incorporate wind & solar maps in CCEP's Platform																
Incorporate CCEP's map in IGAC's platform																
Population Centers																
Review with UPME, CCEP's unification propossal																
Information exchange squeme																
Publish the final methodology and results of its application																
GIS Support																
PERS regional systems interconnected																
National system methodology																

Task 1 - Projects Activities	Sep-14	Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15
	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
HOMER Modeling	[Activity bar]															
Use HOMER tool on Regional PERS project formulation																
Integrate the tool in the National Methodology																
Integrate the tool to structure sustainable rural energization plans																
A technical and economic assessment of possible demand scenarios for Natural Gas	[Activity bar]															
Modeling scenarios for Natural Gas																
Policy proposals																
Final report on the tech & economic assessment of demand scenarios																
EE goals for the transportation sector	[Activity bar]															
First draft report of the main advances of the strategy																
Final Report. Significant results																
Financial Mechanism for EE/RE investments	[Activity bar]															
Agreement UPME CCEP																
Start operations																
Co financing the first 600 million																
Interim report on PPF results & guidelines for future institutionalization.																
Finalize PPF co-financing. Lessons learned																
RE and EE educational projects	[Activity bar]															
Installation of the gasifiers																
Installation of a solar system for the water cycle																
Test, deliver / transfer RE systems																
RE and EE heightened awareness and outreach activities	[Activity bar]															
Event of RE/EE projects and strategies and Law 1715 of 2014																
Event of RE/EE projects and strategies and Law 1715 of 2014																
Pilot for pico light market	[Activity bar]															
Pilot project																
An extensive distribution system in la Sierra Nevada de Santa Marta																
Support the GOC and other NGO's initiative on efficient woodstoves	[Activity bar]															
International Workshop																
Progress report and niche market for CCEP																

2.2 TASK 2- EXPANDING ACCESS TO RENEWABLE ENERGY SOURCES IN CURRENTLY UNSERVED AREAS

2.2.1 Overall approach

Under this component CCEP seeks to promote and construct sustainable renewable energy applications in rural communities through a participatory process for community development with the aid of a multi-disciplinary team of Task 2 staff and consultants as well as specialists from partner institutions. CCEP's team includes engineering and environmental specialists, economists and community development specialists familiar in working with community-based

The principal objective of Task 2 is to encourage the development of innovative, commercially viable renewable energy projects in off-grid communities (ZNI). Task 2 directly supports Intermediate Result 4.2 – Mitigation of greenhouse gas emissions increased.

organizations. In parallel with the community participatory process, a technical process is undertaken by CCEP for each locality involving RE resource evaluation, analysis of local productive activities, energy demand and supply analyses and forecasts, analysis of energy technology options and costs.

In order to assure commercial viability and sustainability of rural energy solutions in generally isolated and poor communities of the ZNI, CCEP projects promote or include not only RE installations but complementary investments in energy-use technology, equipment or installations to add value and generate additional income streams for operation and maintenance based on local productive activities – such as ice production and cold storage for fishing communities; water pumping and irrigation, grain milling or other agricultural produce processing for farming communities; carpentry and handicrafts tools for artisanry; ecotourism facilities; energy supply for social infrastructure (educational and health centers); etc. Emphasis is placed on strengthening technical, managerial and commercialization capacities of local SMEs that will operate and maintain the RE and productive use installations. Furthermore, to ensure long-term sustainability, CCEP has not only sought community involvement and appropriation of RE solutions, but also cosponsorship from national and regional actors, public or private, committed to achieving development objectives in those communities.

In the strategic shift envisioned in the second year work plan and subsequent contract modification approved in January 2014, CCEP began structuring larger scale projects, in addition to continuing efforts to surpass obstacles to implementation of projects previously designed and cofinanced with GOC agencies through mid-2013, targeting 16,000 beneficiaries in off-grid communities. The shift in strategy also involved diversifying partners, clustering projects by region and/or co-financing source and focusing on hybrid solutions for larger scale municipal seats in the ZNI – the latter given the GOC's commitment to providing 24 hour electricity service to 38 localities by 2014.

Following these guidelines, CCEP finalized its second year work plan with a strong portfolio of projects under or nearing implementation during the third year, developed and leveraged with a variety of entities or institutions with long-term stakes and commitments in the communities involved. CCEP's work will shift more and more from its second year emphasis on technically designing, assuring community and partner institution backing and financial leveraging, and obtaining permits from environmental authorities and Ministry of Interior for projects, to a third year emphasis on supervising contractors and strengthening community SMEs during project implementation.

Third Year T2 Project Implementation Focus

- Complete 11 projects requiring over 50% of our Incentive Fund, benefitting some 11,000 people
- Continue developing projects under design or licensing procedures
- Identify and develop second phase or complementary projects with existing partner institutions.

However, at the time of writing some strategic projects under development in the pipeline require further technical design, financial negotiations and institutional formalities to assure complete project closure and implementation, lending some uncertainty to project dimensions and timelines. Despite the commitment and seriousness of the partners with which they are being developed, lessons learned on the institutional and funding

obstacles which must be surpassed for projects to finally take off suggest the need to remain alert and willing to identify additional projects in order to fully achieve CCEP goals. However, additional project ideas received after October 2014 will be closely scrutinized to ensure they can be finalized by early 2016. Thus, priority will be given to new project ideas with the following criteria:

- New phases or projects with existing partners, building on experience and working relations achieved rather than starting from scratch
- Projects not requiring lengthy environmental licensing or social consultation procedures
- Pre-existence and strength of community organization

2.2.2 Planned activities under each Work Stream

During the third year, CCEP will focus its major attention on assuring proper implementation of key projects and strengthening of community organizations involved to assure system sustainability over time, as well as completing designs, permitting procedures and financial closure for the rest of projects identified or structured during year two.

CCEP will also focus on strengthening partnerships with existing counterparts in Task 2 activities to assure successful pipeline implementation and to identify and jumpstart additional project opportunities in line with CCEP objectives and targets.

a. Work Stream 2.1: Cost analysis of renewable and hybrid options

CCEP has been working on different cases analyzing grid extension/diesel/RE/hybrid cost comparison and evaluation models for rural electrification, both at the macro level by Task 1 and at the individual project micro level by Task 2. These modeling efforts have been an integral part of the PERS projects with UPME in Nariño, Tolima and Guajira, as well as the methodology developed for the new ZNI tariff structures with CREG. A common ground for these macro level efforts and the micro level project cost analysis of renewable and hybrid options by Task 2 has been the use of the HOMER model, developed by Homer Energy, LLC, of Boulder, Colorado.

In conjunction with UPME/IADB, CCEP organized an initial 4-day training session of HOMER planning software in Bogotá by the model developers and CCEP consultant Westeva, with the participation of personnel from IPSE, UPME, CREG, and CCEP. The software was used to model specific projects from

each of the participating teams and has been subsequently incorporated into training sessions with regional PERS teams and CCEP partners. For example, CCEP has been using HOMER software to evaluate hybrid renewable energy options for larger scale solar-diesel projects such as EPM’s Vigia del Fuerte (Antioquia) and Bojayá (Choco), and EPSA’s Punta Soldado close to Buenaventura. HOMER software facilitates the design process, helps establish optimum renewable energy mix and determines the levelized cost of energy of the system which is useful in determining the value of the tariff that ensures sustainability of the system.

EPM has recently contracted a detailed design of the hybrid energy solution based on CCEP’s HOMER simulation results. On the other hand, EPSA is committed to implement CCEP’s solution for Punta Soldado in the short term. In this context CCEP has partnered separately with EPM and EPSA to co-sponsor specific projects that are of mutual interest.

Preliminary system size determined via HOMER software, as well as policy targets currently under evaluation, are summarized in the following table:

Table 8 - Task 2 Hybrid Systems under Design Using Homer Software

Locality	Urban Population*	Optimal Renewable Energy Mix	Diesel Capacity and operating hrs/yr	Levelized cost of Energy LCOE (\$/KWH)	Target Solar Share
		Solar kWp / % share			% solar / hrs diesel yr
Vigia del Fuerte	4900	700 kWp /31% of 24 hr-d	760 kW / 6062 hrs	0.39 \$ / kWh	86% of 24 hr-d / 1200 hrs
Bojayá	4000	350 kWp /13% of 24 hr-d	440 kW / 7645 hrs	0.42 \$ / kWh	54% of 24 hr-d / 4000 hrs
Punta Soldado	490	30 kWp /50% of 8 hr-d	135 kW / 1460 hrs	0.49 \$/ kWh	50% of 8 hr-d / 1460 hrs

* To be verified by socioeconomic and energy baseline census for Vigia del Fuerte and Bojaya

In addition, IPSE has submitted to CCEP a list of ZNI municipal seats for which it is designing hybrid solutions such as Carurú, Taraira, Cumaribo and Casuarito (totaling nearly 2 MW solar/diesel arrangements in the Orinoco and Amazon regions), seeking feedback on viability and potential co-sponsorship from CCEP to implement them through their 2015 investment budget. These sites are included under IPSE’s main stream of municipalities which should reach 24 hour electricity service by end of 2014 based solely on diesel generation, a solution clearly unsustainable in the medium and long term. CCEP will start running HOMER simulations once baseline information is provided.

Table 9 - Task 2 Work Stream 1 Activities

Activities Work Stream 2.1	Description
Provide Cost Analysis Models	<p>CCEP is using HOMER software and RE technology cost data base to design and provide cost analysis to the RE solutions for larger sized Hybrid Solar-Diesel systems.</p> <p>Main result: Identification of sustainable RE systems models in the off-grid zones (ZNI) regions, and review is construction feasibility.</p> <p>Milestone 1- October 2014: Develop Hybrid Energy Options for EPM’s Vigia del Fuerte – Bojayá and for EPSA’s Punta Soldado projects.</p> <p>Milestone 2 – March 2015. Complete engineering designs and financial</p>

	<p>arrangements for EPM's Vigia del Fuerte – Bojaya projects, seeking to assure implementation by mid-2016.</p> <p>Milestone 3 – February 2015 – June 2015. Provide technical assistance and hand off to IPSE in the use of the HOMER software to design hybrid solutions and provide cost analysis to some of the other ZNI municipalities included under IPSE’s mandate to provide municipalities with 24 hour energy service.</p>
--	---

b. Work Stream 2.2: Project identification, implementation and sustainability

After delays in assuring counterpart funding, environmental permits and/or contractor bids, eleven projects have been confirmed and will be implemented during CCEP’s third year, requiring incentive fund resources budgeted at US \$2.4M, as summarized below:

Table 10 - Task 2 Projects Assured for Third Year Implementation

Renewable Energy Resource	Co-funding Partner	Project / Locality	Start Date	Closing Date	Months Implementation	BUDGET IN USD '000 **		
						Total CCEP Investment	Counterpart funding	Total Investment Cost
Solar + biomass	CVC Indigenas	CVC Santa Rosa	May-14	Oct-14	6	122,105	3,158	125,263
Solar/Manual	FCGI (Cerrejon)	Water pumping 49 communities	Aug-14	Mar-15	8	134,737	152,632	287,368
Hydro	DPS IPSE	Arusi	Oct-14	Aug-15	10	287,737	1,082,632	1,370,368
Hydro	IPSE	El Yucal	Oct-14	Apr-15	7	163,421	243,684	407,105
Hydro	IPSE	Palmor	Oct-14	Aug-15	10	538,021	745,789	1,283,811
Solar	EPM Gobernacion	CERIS (Indigenous education centers)	Oct-14	Feb-15	5	26,316	473,684	500,000
Solar	None	Cajambre PIMPESCA	Nov-14	Feb-15	4	137,368	-	137,368
Hybrid PVS/DO	EPSA	Punta Soldado	Feb-15	Aug-15	7	263,158	263,158	526,316
Solar	EPSA	Bajo Calima	Feb-15	Aug-15	7	78,947	78,947	157,895
Hydro	None	Sabana de Crespo	Feb-15	Aug-15	7	526,221	-	526,221
Solar	DPS	Arquia	May-15	Aug-15	4	94,737	526,316	621,053
Subtotal 11 Projects						2,372,768	3,570,000	5,942,768

** Current budget estimated at average conversion rate of COP \$1,900 per USD \$1.

A second group of projects CCEP has been working on for near-term implementation include:

- Hybrid solar-diesel systems for the municipal seats of Vigia del Fuerte and Bojaya with EPM. These two towns are part of the IPSE’s list of ZNI municipal seats. At the time of writing, a baseline socioeconomic census was being implemented by CCEP to pinpoint population targets and existing household, commercial and institutional equipment. Pessimistic estimates indicate that, if implemented, these projects could cover a minimum 5,000 beneficiaries.
- Second phase of CVC indigenous and Afro-colombian community RE systems under design for 5 locations, targeting above 600 beneficiaries.
- Implementation phase of several project designs developed by the regional PERS teams in Nariño, Tolima and Guajira. These include community sized generating systems based on timber residues from licensed sawmills and RE systems for vocational training schools in Sanquianga, Pacific Coast of Nariño, as identified by PERS Nariño, and rice husk gasification systems for an off-grid community in Tolima.

- Solar systems for a group of operating health (“tele-medicine”) centers identified by Chancellery’s PFP, one of CCEP’s partners in PERS Guajira.
- Second phase project pipeline under development with IPSE for implementation after current joint projects are well off ground in Nuqui and Sierra Nevada.

Details and timelines for the implementation of selected projects are included in the table Status of Task 2 Rural RE Project Portfolio – 2014.

Table 11 - Task 2 Work Stream 2 Activities

Activities Work Stream 2.2	Description
Project identification and implementation	CCEP has designed and is implementing the pipeline of projects described above and included in table "Status of Task 2 Rural RE Project Portfolio – 2014". For each specific project main results and milestones are detailed.

c. Work Stream 2.3: Capacity building for rural energy SMEs

CCEP’s major concern is to ensure that all its rural renewable energization projects will be technically, socially, environmentally and economically sustainable, and will favorably impact the quality of life and economic activities of beneficiary communities. Technical and environmental sustainability are assured by the high quality designs, components, safeguards and installation techniques incorporated in our projects. These systems are developed by CCEP and partner institution engineers, consultants and contractors – but all of these systems are unfamiliar to the intended beneficiary communities. CCEP’s efforts seek to ensure that communities will be able to run the RE systems installed, once the engineers and external personnel has gone.

Social and economic sustainability can best (if not only) be assured through active community involvement, appropriation and management of the energy solutions installed, specially when communities are isolated and operating their systems are not commercially attractive for private energy companies.

Given the concerns described above, CCEP selects projects that can incorporate productive uses of energy and be appropriated by community organizations trained to operate, maintain and collect fees to assure RE system continuity for the lifetime of the installations delivered. For each specific project, CCEP studies local needs and economic activities that can be enhanced with the use of energy, and designs mechanisms to collect fees and generate income streams to assure permanent delivery of energy required to intended beneficiaries and energy service SME’s ability to perform all operation and maintenance requirements, including replacement of batteries and regulators in solar systems, spare parts for micro hydropower plants and micro grids, etc.

In all cases, CCEP identifies and promotes opportunities for productive use of renewable energy in beneficiary communities, supporting the creation or strengthening of community-based SMEs, by providing proper enterprise development services to rural and clean energy entrepreneurs involved in the development, design, installation, operation, and maintenance of rural renewable energy systems. CCEP’s community assistance seeks to strengthen community capacity in terms of financial management, fee collection for services, bookkeeping, and organizing micro enterprises to manage the systems.

In order to achieve these objectives, CCEP will be hiring local consultants with expertise in organizational and entrepreneurial development to provide on-site assistance and training to communities. The technical and operation capacities needed to run the RE systems can be transferred by CCEP, IPSE and other partnering engineers; however the real challenge is to establish a well-oiled organization that can manage the energy service operations and local productive development need to be addressed in parallel as indicated above.

Table 12 - Task 2. Work Stream 3. Activities

Activities Work Stream 2.3	Description
Organizational and entrepreneurial development	For each project CCEP or its partner will provide the entrepreneurial and organizational needed assistance. The milestones for each case are related to the unique development steps of each system deployment.

d. Work Stream 2.4: Impact evaluations

During the prefeasibility studies for each RE system, CCEP has performed baseline studies regarding not only energy demand but also socioeconomic conditions.

Impact evaluation will be performed 6 to 12 months after the end of each project, once communities and SMEs have had a chance to take ownership and use the new systems, to determine whether targets have been achieved and changes in the socioeconomic conditions found during these studies can be analyzed.

During the first projects, CCEP will focus its evaluation on the methodologies, instruments and tools used to implement the projects, which will help CCEP improve the process and enhance the potential results of future projects. The rest of the projects will include this dimension, together with the impacts related to energy use, climate change and economic growth expected from the projects.

Table 13 - Task 2 Work Stream 4 Activities

Activities Work Stream 2.4	Description
Project impact evaluation	During the design of each RE project, a baseline study is established in order to determine existing living conditions, number of beneficiaries and set a basis to measure changes in the quality of lives of the beneficiaries once projects are finalized. Monitoring is performed throughout project implementation, and after project completion CCEP performs an impact evaluation to verify the changes sought to accomplish at the beginning of the project. For each specific project an impact evaluation is programmed in the Pipeline Projects.

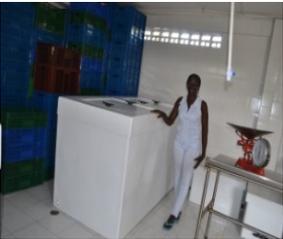
e. Specific project status and implementation plan of selected projects

The status of projects is divided into: assured projects and the near-term implementation projects.

Table 14 - Assured Task 2 Projects 2014 – 2015

Project	Description	Components	Status	Start	End
<p>CVC – Santa Rosa de Guayacan.</p> 	<p>Implementation of photovoltaic systems and biomass use in the indigenous reservation of Guayacan, municipality of Buenaventura – Valle del Cauca</p>	<p>Installation of photovoltaic systems (households/school/school’s restaurant), construction of an efficient wood fuel stove (school), modular efficient wood fuel stoves for households, implementation of a wood fuel plot and training on RE/EE</p>	<p>Under implementation.</p>	<p>April 2014</p>	<p>October 2014</p>
<p>Fundacion Cerrejon Guajira Indigena.</p> 	<p>Installation of photovoltaic and manual systems to guarantee access to clean water for the Wayuu indigenous community – La Guajira</p>	<p>Installation of water photovoltaic pumps, submersible solar pumps in earthen dikes, rope & washer and bicycle pumps, to provide access to clean water in 32 rancherias in La Guajira. Support to FCGI's experimental farm in the installation of a photovoltaic system for the auditorium, the refurbishment of the current pumping photovoltaic system, and the supply and installation of a bicycle and manual pumps with supporting structures.</p>	<p>Under implementation.</p>	<p>August 2014</p>	<p>March 2015</p>
<p>Agua Clarita MHP Project.</p> 	<p>Construction of a MHP for the towns of Arusi-Partado-Termalés, municipality of Nuqui - Choco</p>	<p>Construction of a 100 Kw MHP, including household electrical installations, public lighting, EE training, installation of a SME for ice production, and support to strengthen the Energy Service Administrative Board.</p>	<p>Starting implementation.</p>	<p>October 2014</p>	<p>August 2015</p>

Project	Description	Components	Status	Start	End
<p>El Yucal MHP Project.</p> 	<p>Construction of a MHP in the indigenous community of Rio Pangui-Nuqui, Choco.</p>	<p>Construction of an 18Kw MHP, including household electrical installations, public lighting and EE training. Support to a rice and corn mill productive project and a carpentry workshop. Community and entrepreneurial strengthening.</p>	<p>Starting implementation.</p>	<p>October 2014</p>	<p>April 2015</p>
<p>Palmor MHP Project (SNSM)</p> 	<p>Refurbishment of a 150 Kw MHP, through the installation of a second turbine to cover increasing energy demand in Palmor, municipality of Cienaga – Magdalena.</p>	<p>Implementation of a new turbine for the generation of 150 Kw, new medium and low tension electric networks, and EE training.</p>	<p>Starting implementation.</p>	<p>October 2014</p>	<p>August 2015</p>
<p>EPM - CERIS</p> 	<p>Installation of solar photovoltaic systems in Rural Indigenous Educational Centers (CERIs) – Antioquia.</p>	<p>Installation of photovoltaic systems in indigenous educational centers in the municipalities of Chigorodo, Dabeiba, Frontino, Urao, Segovia, Necocli and Zaragoza. Training on the operation of PV systems, RE and EE.</p>	<p>Finishing Designs</p>	<p>October 2014</p>	<p>August 2015</p>

Project	Description	Components	Status	Start	End
<p>PIMPESCA – C.C. Cajambre</p> 	<p>Installation of photovoltaic systems for fish refrigeration in the fishing association - PIMPESCA, Punta Bonita – municipality of Buenaventura, Valle del Cauca.</p>	<p>Installation of photovoltaic systems and refrigerators; and training processes for the operation, administration, technical management and repair of the installed technologies.</p>	<p>Finishing Designs</p>	<p>November 2014</p>	<p>February 2015</p>
<p>Punta Soldado – EPSA</p> 	<p>Installation of a hybrid solar – diesel system for Punta Soldado, municipality of Buenaventura – Valle del Cauca</p>	<p>Installation of a hybrid solar-diesel system to supply energy demand in the town of Punta Soldado. Training on RE/EE, operation, administration, technical management and repair of the installed technologies.</p>	<p>Project Design</p>	<p>February 2015</p>	<p>August 2015</p>
<p>Bajo Calima – EPSA</p> 	<p>Installation of solar photovoltaic systems Buenaventura – Valle del Cauca</p>	<p>Installation of photovoltaic systems in the communities of Bajo Calima (Nueva Esperanza, Ceibito, La Trojita and Guadual. Training on RE/EE, operation, administration, technical management and repair of the installed technologies.</p>	<p>Project Design</p>	<p>February 2015</p>	<p>August 2015</p>

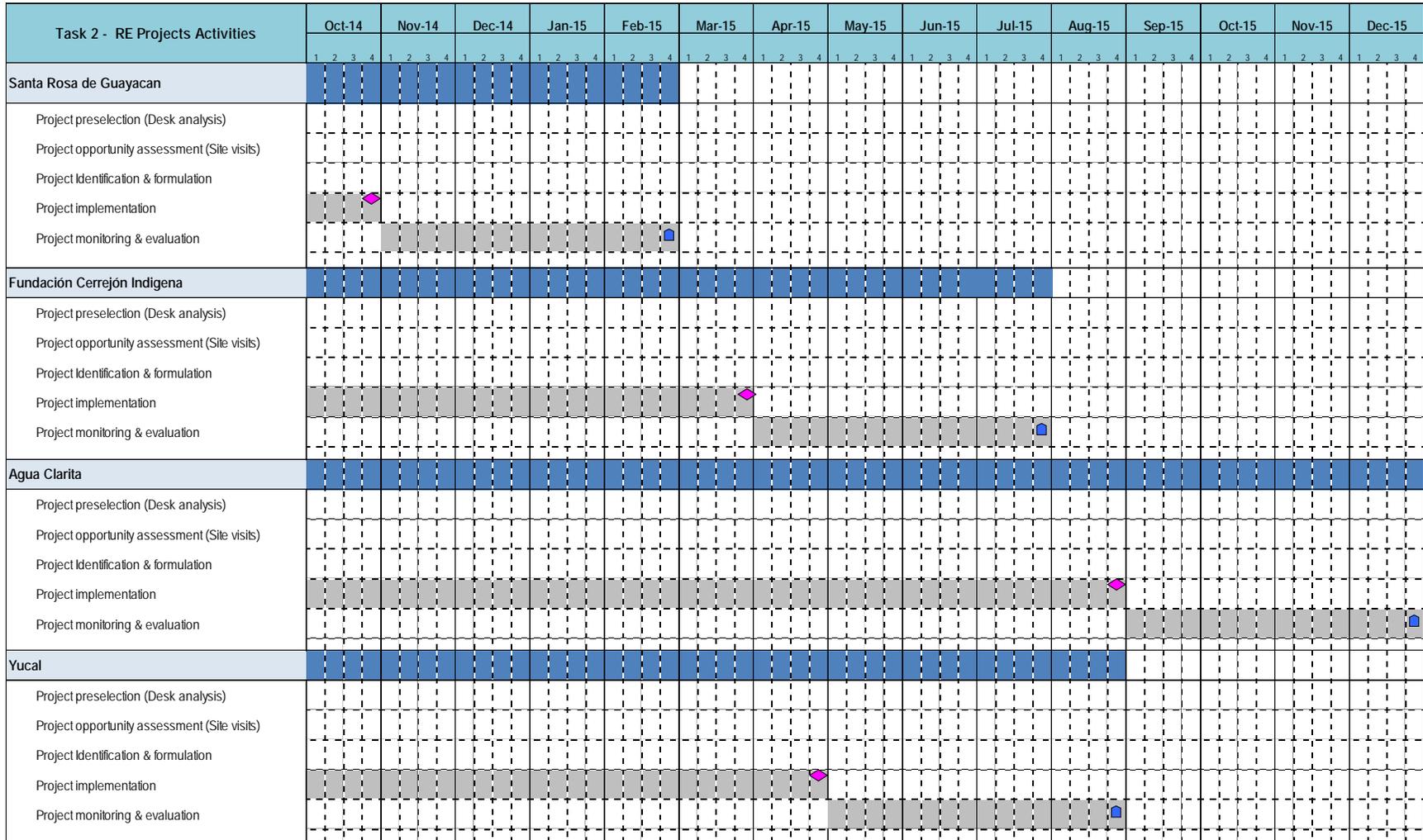
Project	Description	Components	Status	Start	End
<p>Sabana de Crespo</p> 	<p>Construction of a MHP in the Arhuaco indigenous community of Sabana de Crespo – Valledupar.</p>	<p>Construction of a 10 kw MHP in Templadito river, including subterranean distribution lines and household electrical installations for: the Educational Center (classrooms, computer room, library, restaurant and restroom facilities); the health center (general medicine consulting rooms, dentistry, vacuum refrigeration and pediatrics), meeting room and communal stores. Includes training on EE, MHP technical operation and administrative management.</p>	<p>Project Design</p>	<p>February 2015</p>	<p>August 2015</p>
<p>Arquia</p> 	<p>Installation of solar photovoltaic systems for the Tule indigenous community in the reservation Arquia, municipality of Unguia, Choco.</p>	<p>Installation of solar photovoltaic systems for the social infrastructure (school restaurant, computer room, infant medical care center, female crafts workshop and the cacao producers association). Includes training on EE, MHP technical operation and administrative management.</p>	<p>Project Design</p>	<p>May 2015</p>	<p>August 2015</p>

Table 15 - Task 2 Projects in Structuring for Near-Term Implementation

Project	Description	Components	Status	Start	End
Vigia del Fuerte – Bojaya - EPM	Installation of a hybrid solar-diesel system. Municipalities of Vigia del Fuerte (Antioquia) and Bojaya (Choco).	Installation of a photovoltaic system (photovoltaic park) in a hybrid system to supply 24 hours of energy service in the municipalities of Vigia del Fuerte and Bojaya.	Design phase	TBD	TBD
Phase II CVC	Implementation of RE systems in up to 5 indigenous and Afro Colombian communities in CVC jurisdiction	To be determined for each community under identification and selection phase	Design phase	TBD	TBD
PERS Project portfolio	RE project profiles developed by PERS Nariño, PERS Tolima and PERS Guajira for possible CCEP implementation	To be defined	Identification phase	TBD	TBD
Telemedicine – Plan de Prosperidad de la Frontera.	Installation of solar photovoltaic systems in frontier municipalities of La Guajira, Cesar, Vichada, Putumayo, Choco and Providencia.	Installation of photovoltaic systems to create a platform to consult computer equipment through specialized professionals, internet access and diagnose tools in frontier departments and municipalities.	Design phase	TBD	TBD
Phase II - IPSE	IPSE 2015 investment portfolio under analysis for possible CCEP participation	To be defined	Design phase	TBD	TBD

2.2.3 Gantt chart

Figure 5: Task 2 Projects Gantt chart



Task 2 - RE Projects Activities	Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15		
	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4		
Palmor																	
Project preselection (Desk analysis)																	
Project opportunity assessment (Site visits)																	
Project Identification & formulation																	
Project implementation												◆					
Project monitoring & evaluation																	■
CERIS																	
Project preselection (Desk analysis)																	
Project opportunity assessment (Site visits)																	
Project Identification & formulation																	
Project implementation												◆					
Project monitoring & evaluation																	■
Cajambre PIMPESCA																	
Project preselection (Desk analysis)																	
Project opportunity assessment (Site visits)																	
Project Identification & formulation																	
Project implementation					◆												
Project monitoring & evaluation															■		
Punta Soldado EPSA																	
Project preselection (Desk analysis)																	
Project opportunity assessment (Site visits)																	
Project Identification & formulation																	
Project implementation															◆		
Project monitoring & evaluation																	■

Task 2 - RE Projects Activities	Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15	
	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	
Calima EPSA	[Blue shaded header row]															
Project preselection (Desk analysis)	[Empty grid cells]															
Project opportunity assessment (Site visits)	[Empty grid cells]															
Project Identification & formulation	[Grey shaded cells from Oct-14 to Jan-15]															
Project implementation	[Grey shaded cells from Feb-15 to Aug-15]															
Project monitoring & evaluation	[Grey shaded cells from Sep-15 to Dec-15]															
Sabana de Crespo	[Blue shaded header row]															
Project preselection (Desk analysis)	[Empty grid cells]															
Project opportunity assessment (Site visits)	[Empty grid cells]															
Project Identification & formulation	[Grey shaded cells from Oct-14 to Jan-15]															
Project implementation	[Grey shaded cells from Feb-15 to Aug-15]															
Project monitoring & evaluation	[Grey shaded cells from Sep-15 to Dec-15]															
Arquia	[Blue shaded header row]															
Project preselection (Desk analysis)	[Empty grid cells]															
Project opportunity assessment (Site visits)	[Empty grid cells]															
Project Identification & formulation	[Grey shaded cells from Oct-14 to Apr-15]															
Project implementation	[Grey shaded cells from May-15 to Aug-15]															
Project monitoring & evaluation	[Grey shaded cells from Sep-15 to Dec-15]															

 Project official delivery and closure

 Equipment installation completed

 In case another icon is needed

2.3 TASK 3 - ENERGY EFFICIENCY AND RENEWABLE ENERGY INVESTMENT PROMOTION

2.3.1 Overall approach

Under this component CCEP is providing technical assistance and training to enable companies to bring industrial/agro-industrial clean energy projects to financial closure and support project sustainability and replication. This component is focused primarily on small- and medium-size industries, but also considers large facilities that have replication potential and EE projects in areas of interest to USAID and the GOC.

From the beginning of the Program, target industries/companies have been identified based on: (i) economic viability of EE/RE investments; (ii) potential impact of EE/RE investments in terms of energy reduction and cost-savings; (iii) potential for a demonstration effect, information-sharing, and replication among similar facilities/companies (e.g., through an industrial association; with industries that are physically clustered); and (iv) complementarity with other donor activities or with specific financial credit lines for EE/RE investments available through national banks and other organizations.

The principal objective of Task 3 is to implement interventions to catalyze industry/enterprise investments in EE/RE through a combination of project development, financing facilitation, and technical and business advisory services/technical assistance. Task 3 directly supports Intermediate Result 4.2 – Mitigation of greenhouse gas emissions increased.

CCEP quickly established relationships with national banks already offering specific credit lines, particularly the LCA mechanism sponsored by SECO to reimburse up to 25% of credit incurred if projects achieved specific energy savings and emissions reduction targets. Therefore, CCEP began its promotion of energy efficiency investment through direct technical assistance and transaction support to individual companies seeking to access existing credit lines and offering training and advisory services on industrial EE/RE project opportunities and existing mechanisms to financial institutions, industries and EE/RE project developers. As time went by, few of the many companies assisted actually moved forward with investing in this type of projects through credit lines, and in the second year CCEP began to develop additional project pipelines. Nonetheless, those companies which did complete the “direct assistance – EE/RE bank credit” route with CCEP have invested USD \$3.45M to date in projects producing significant energy savings and CO₂ emissions reductions, so CCEP will continue to maintain an ongoing pipeline of EE/RE projects on a case by case basis, at least throughout year three.

Seeking to increase and accelerate the pace of actual EE/RE project investments, during the second year CCEP expanded its focus to work on three additional project portfolios under Task 3, the first two identified in the second work plan and the third arising during its implementation:

- Partnering with Energy Service Companies (ESCOS), which can directly structure and finance EE/RE projects through energy service contracts in companies otherwise unwilling or unable to invest their own resources outside their core businesses. Investments totaling over USD \$10M are being structured by ESCOS under engineering/financial studies co-financed through CCEP’s Incentive Fund, and new ones are being identified to be channeled through the PPF mechanism during year three.

- Partnering with environmental authority CVC to develop a program aimed specifically to reduce pollution through EE/RE investments in the Yumbo industrial corridor, where emissions have risen above permissible levels and CVC may be forced to sanction companies. In a “carrot-and-stick” approach, CCEP and CVC joined in an 18-month effort to identify EE/RE projects in up to 20 companies, structure detailed investment projects in up to 7 of these, and reach financial closure and investment decisions by participating companies.
- Through programs and studies sponsored by international cooperation, public institutions and private foundations, low-cost technological solutions which can significantly reduce fossil fuel consumption and CO₂ emissions per unit of output in brick kilns and industrial boilers have been identified. In the case of brick manufacturing, Colombia has many small and medium sized companies, often family-run, with limited technical and financial capacity to incur in detailed engineering studies or formal bank loans. In order to motivate broader adoption of a specific technology, CCEP partnered with CAEM, the environmental business affiliate of the Bogota Chamber of Commerce, to implement pulverized coal dosifiers in 20 SME brick manufacturers inscribed in the program.

The second year work plan also identified the need to complement technical designs and credit applications at the operational level of companies and the T3 team in Medellin, with strong financial structuring and investment promotion at the decision-making levels. Towards this end CCEP, through the Segura Consulting team, has actively engaged top management and owners of companies identified by the different technical teams working on project designs, and CCEP’s Bogotá team handled the structuring and initial implementation of the CAEM project.

CCEP’s third year work plan identifies what can be done in the near term to move forward and/or speed up the implementation of six project portfolios (P1-P6), placing emphasis on projects which might be completed, or near completion, by end of 2015, thus:

- Accompanying projects already being implemented or structured through our first three portfolios:
 - P1. Case by case project applications in conjunction with financial institutions
 - P2. Yumbo industrial corridor projects under prefeasibility analysis
 - P3. ESCO projects under development
- Sponsoring adoption of low-cost high-savings combustion improvement technologies requiring little engineering and financial structuring through cost-share schemes developed with specialized NGOs, equipment suppliers, and companies involved in other CCEP portfolios, specifically:
 - P4. CAEM project focused on installation of coal dosifier systems for 20 SME brick manufacturers.
 - P5. Cluster of projects focused on boiler energy optimization in industrial combustion systems (“Boiler project” consisting of co-financing travelling grates for coal boilers and electronic combustion control systems for natural gas boilers)
- Completing and initial PPF portfolio of engineering/financial structuring projects submitted for analysis with UPME for implementation starting October 2014 under the recently signed \$685K cooperation agreement between the two parties to quickstart a “transition phase” of the PPF, while additional arrangements take place for its growth and institutionalization.
 - P6a PPF transition phase
 - P6b PPF institutionalization phase

A general time frame for the implementation of these different portfolios is summarized in figure 6.

Figure 6: Task 3. General Timeframework. Clean Energy Projects

Project Implementation Portfolios		Dec 2012	Dec 2013	Dec 2014	Dec 2015	Dec 2016
P1.	T3 Case by Case					
P2.	Yumbo industrial corridor					
P3.	T3 ESCO Projects					
P4.	Combustion optimization CAEM brick SME project					
P5.	Boiler project					
P6.	Clean Energy PPF Projects					
6a	PPF Transition					
6b	PPF Institutionalization					

CCEP started assisting case by case projects associated with existing credit lines, from established financial institutions, and will be continuing assisting this type of projects through the rest of the third year work plan. This case by case scenario takes advantage of a project initiated 8 years ago by the Swiss Cooperation Agency SECO where small and medium size companies receive up to 25% reimbursement of the total energy efficiency credit incurred for the corresponding investment as a subsidy. These projects have their own path of financing and assistance and cannot be included into the new CCEP's project implementation approaches. The Yumbo industrial corridor cluster is being developed over the same time frame, using the technical assistance of the Medellin CCEP team.

During the second year, CCEP started cosponsoring ESCO projects and will finish assisting these initiatives. New ESCO project opportunities will be channeled through the transitional PPF mechanism as of October 2014.

The CAEM project with 20 SME brick manufacturers will be continued until its culmination in mid-2016, though the coal dosification systems themselves should be implemented during 2015 and initial emissions reductions accounted at end of the current work year.

CCEP is also structuring a boiler combustion optimization project for implementation during the third year, whose final dimensions and operational arrangements will be presented and discussed with USAID in December 2014. This project proposal arises from recent results of the UPME/Incombustion study "*industrial energy consumption by industrial subsector*", as well as interactions of CCEP with industries, equipment manufacturers, university research teams and environmental authorities.

In order to accomplish expected progress on implementing selected projects, CCEP will continue to use the current team supported by a new senior mechanical engineer specialized in EE. This engineer is located in the Bogota office, coordinating the EE staff of Medellin, and the ESCOs and industries proposals.

This technical reinforcement at the Bogota office is providing needed support in the following aspects:

- Provide technical support on the process of monitoring and evaluating the Energy Efficiency investments included in CCEP's project pipeline.

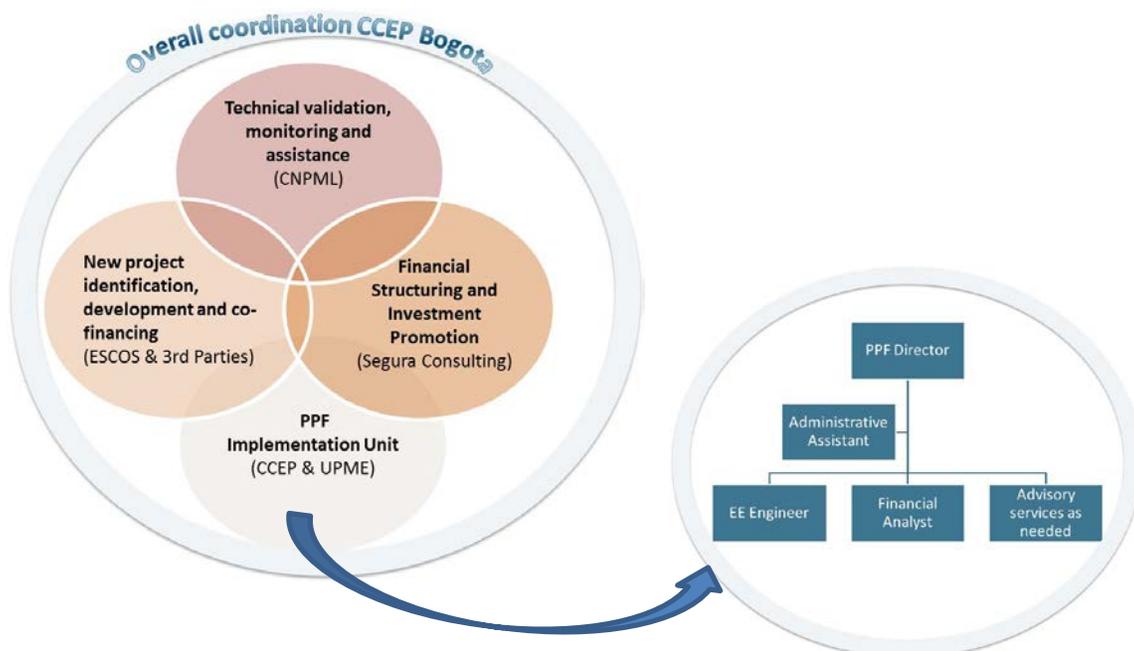
- Provide technical support to CCEP in the design and initial operation of the Project Preparation Facility - PPF, a mechanism created by CCEP and cosponsored by UPME to facilitate co-financing pre-feasibility studies to private investments on Energy Efficiency and Renewable Energy projects on the Industrial, Services and Transportation sectors with important potential of CO₂ sequestration.
- Assist CCEP/COP in all Energy Efficiency issues and opportunities that might appear in his task of provide support to the Government of Colombia
- Provide support to UPME in designing specific transport sector targets for PROURE's new Indicative Action Plan 2016-2020 (To be carried out as part of CCEP's task 1).

Another organizational novelty to be implemented during the third year is the establishment of a small PPF "Technical Financial Unit" to handle the day to day technical, administrative and investment promotion tasks of the transitional phase of the PPF. This team will be responding to the PPF operational manual and Board of Directors established in the CCEP/UPME agreement, the unit will be based in CCEP's Bogota office, composed by: a senior PPF Director or general manager, an EE project engineer, a financial analyst, and an administrative assistant. While budgets are assigned and hiring procedures take place, existing CCEP and UPME staff and consultants will initiate operations in October 2014.

Carrying over activities initiated during the second year work plan, the technical teams in Bogota and Medellin – and the PPF mechanism – will continue to receive transaction support for financial structuring and investment promotion from the Segura Consulting team. In fact, the financial analyst required for the PPF Unit has already been budgeted for and will be seconded full time from this subcontractor's budget.

The following figures outline the roles of each party, as well as the interactions among them. Each team will perform specific activities and provide particular expertise, complementing and assisting the endeavor and efforts initiated by any of the other three teams.

Figure 7: Task 3 Project work coordination



a. *Technical validation, monitoring and assistance support (CNPML)*

During the third year we envision that most of the technical validation, monitoring and assistance necessary for the implementation of the projects in the pipeline will continue to be carried out by CNPML but with a strong technical direction and coordination from CCEP's Bogota office. The main focus in this area will be to carry out implementation of already identified projects by providing support to:

- Regarding portfolio P1 (cases by case projects). Continue and complete up to 10 projects in the pipeline identified in previous years focusing in those industries where CCEP has reached top management interest and commitment, have a high potential for greenhouse gas (GHG) emissions reduction, and comply with the industry sector criteria previously established.
- Regarding portfolio P2 (industrial corridor with environmental authority). Continue and complete evaluation of opportunities in a wide range of industries located in the Yumbo industrial corridor and vicinity focusing on more than 50 industries considered eligible to perform energy basements and develop feasible EE projects. Under this identification stage CCEP has completed visits to some twenty companies and has reached agreements with major emission emitters but during this third year the Centro must assist at least 7 of them in formulationg EE/RE investment projects at prefeasibility phase, to present to the PPF, ESCOs of financial institutions for next stage of development.
- Participate in the design, organization and implementation of a “combustion optimization project” (portfolio P5) geared towards rapid adoption of relatively low-cost combustion control systems where they can guarantee a minimum verifiable reduction of 500 tons of CO₂ emissions per year, identified from inventories made by the UPME/Incombustion industrial energy use study, the different engineering studies undertaken through CCEP and participating companies and equipment manufacturers, and other knowledgeable actors with which CCEP has been evaluating the development of such a program.
- Provide technical and economic support to EE or RE investment proposals identified by other parties (portfolios P3, P4, P6), assuring CCEP's technical validation and assuring proper monitoring and evaluation of investments.
- Finalize two technical guides for biogas use and EE opportunities for the brick sector, and disseminate these through workshops targeted at industries and project developers. Initial drafts were already generated and should be completed during year three. These guides detail major clean energy opportunities and the potential in reducing CO₂ emissions.

b. *Project identification, development and co-financing with Third Party Alliances*

In order to expand the scope of our capacity to identify, select, and implement additional projects, during year two CCEP pursued and materialized partnerships with local ESCO companies such as MGM Energy Services and Garper Energy Solutions, as well as other companies and institutions specialized in EE/RE such us the Bogota Chamber of Commerce's affiliate CAEM.

CCEP has signed MOUs and subcontracts with the three organizations mentioned to design and develop a specific pipeline of projects for industrial and commercial establishments focusing on implementing projects taking advantage of each company's technical expertise. For example, Garper Energy Solutions has successfully implemented electricity saving projects in commercial and services enterprises, MGM Energy Services has a broad experience in implementing thermal energy efficiency processes to ceramic and agro industry sectors, and CAEM structured a 2-year USD \$1.17M project

targeting a 30% reduction in fuel consumption and approximately 16,700 tons of annual CO2 emissions by 20 brick manufacturers in the departments of Cundinamarca and Boyacá.

In the case of MGM, the first energy services contract offer for the installation of process steam equipment using biogas from a waste treatment was accepted by dairy company COLANTA, and the investment is under construction. Under portfolio P3, other ESCO offers are being developed and considered by participating industries or commercial establishments. CCEP will continue to co-finance and develop necessary final engineering and business plans for financial closure and decision-making by companies and financial institutions to fund investment on selected projects. To this end, further development of alliances and partnerships with ESCOs and other project development teams will take place throughout the third year. However, wherever requests for co-financing of specific project proposals meet the objectives and criteria of the PPF, new initiatives will be channeled through that mechanism to develop portfolio P6.

c. *Financial structuring and investment promotion support (Segura Consulting)*

As previously discussed, project structuring and implementation require a combination of technical and financial designs as well as top management approvals. During the second year, Segura Consulting helped CCEP assure management approvals for participation of major firms in project development, both through direct case-by-case assistance and through ESCO initiatives. During the third year this investment promotion team will continue emphasizing its mostly financially driven project development support supported by a technically sound approach. Segura's technical support will continue with a much more focused financial support to persuade company CEOs and boards of directors on the benefits of making the financial commitments on technically sound investments. For this purpose, and given the financial and commercial expertise of Segura Consulting partners in Colombia, they will continue to help with negotiations and provide financial structuring to viable projects.

Segura Consulting will also continue supporting the initial start up of the Clean Energy Project Preparation Facility (PPF) operational unit under Task 1, and it will complement CCEP's technical team and additional engineering partners with its banking and management skill.

d. *Clean Energy Project Preparation Facility Unit (CCEP-UPME)*

CCEP's third year plan includes the formalization and start-up of the PPF operational unit to make it fully operational and capable of (co)financing the type of final engineering and financial structuring of projects undertaken through ESCOS and third party alliances. The recently signed agreement between CCEP and UPME, which has immediately committed about USD \$300K (Col 600 million), allows us to jump start the PPF to initiate immediate implementation of a few preselected EE projects in partnership with UPME.

CCEP plans to build up on its experience working with ESCOs, to co-finance and develop the necessary final engineering and business plans for financial closure and decision-making by companies and financial institutions to fund investment on selected projects of this new pipeline (P6).

CCEP will pass on all new ESCO initiatives to the PPF and continue to monitor, evaluate and close all projects initiated with these partners during Year 3.

2.3.2 Planned activities under each Work Stream

An updated description of the various work streams under Task 3 area is included below.

a. **Work Stream 3.1 -Industrial subsector and/or technology assessment**

CCEP identified the following strategic industrial subsectors and targeted cross-cutting technologies based on available statistics and secondary information, as well as previous knowledge and intensive interactions between our technical team and stakeholders such as industrial associations, financial institutions, Ministry of Mines and Energy, Ministry of Environment, UPME, energy service providers, utilities, academia, among others³.

Table 16 - Task 3 Industrial subsector and/or technology assessment

Industrial sector focus	Technical focus
1- Ceramics, glass and brick manufacturing	Thermal energy technologies (heat recovery, cogeneration including combined heat and power (CHP) or combined cooling, heat and power (CCHP))
2- Agro-industrial, food and beverage	

During the third year CCEP’s work will continue to focus on the initially identified strategic industrial subsectors and will also target cross-cutting technologies as described in our previous work plan.

Through Incombustion, a consortium of universities led by U. de Antioquia, UPME has recently finalized its initial study on energy consumption patterns of 10 key industrial subsectors and types of equipment. Through a separate team (CORPOEMA), UPME is characterizing consumption patterns in the rest of industrial subsectors and technologies. Based on results of these studies to date, CCEP will update its initial subsector and technology assessment, scheduled in our third year Work Plan for December 2014.

The table below provides additional details on the main activities under this work stream including main results and key milestones.

Table 17 - Task 3 Work Stream 1 Activities

Activities Work Stream 3.1	Description
Update sectorial and technology assessment	UPME – the agency in charge of generating energy technology and energy use data for all sectors – is currently focusing on establishing statistically reliable estimates of energy consumption patterns by key industrial subsectors such as the industrial subsectors prioritized by CCEP during the first year of implementation "ceramics, glass and brick manufacturing and agroindustrial businesses" and types of equipment, seeking to overcome serious information voids needed to design targets and performance indicators for energy efficiency policies and programs in the second PROURE Action Plan (2015-2020). These studies are being performed by a consortium of universities.

³ The assessment, presented as Annex 1 of our Q2/2012 report, weighed economic, social and environmental aspects of energy consumption by different industries and agro industries.

Activities Work Stream 3.1	Description
	<p>Main result: Assist UPME in establishing energy consumption patterns by key industrial subsectors and types of equipment, thus updating CCEP sectorial and technology assessment</p> <p>Milestone 1- December 2014. As a result of the studies performed by Incombustion and progress to date by CORPOEMA, CCEP will update its sectorial and technology assessment.</p>
<p>Include commercial sector project opportunities</p>	<p>CCEP will continue working on already identified industrial projects and expand its sectorial focus to include commercial sector project opportunities.</p> <p>Main result: Include commercial sector projects that could have an important contribution on CO₂e reductions.</p> <p>Milestone 1- In May 2014 CCEP signed a co-financing agreement with Garper to conduct detailed engineering studies and financial structuring required to determine energy efficiency and operational parameters of the electric system, refrigerators and illumination systems in 300 stores affiliated to FENALTIENDAS</p> <p>Milestone 2 - February 2015 Completion of feasibility study, business model and installation and operation of the first refrigeration and lighting equipment in participating stores.</p> <p>Milestone 3 - July 2015. First trench of Fenaltiendas program implementation completed</p> <p>Milestone 4 – September 2015. M&E completion about Fenaltiendas program.</p>

b. Work Stream 3.2 - Identification of target industries/companies and project development

CCEP’s project identification and development efforts during the previous years have resulted in a solid and focused pipeline of opportunities, but the pace of project implementation has been slower than expected. Through July 2014 CCEP had completed three projects, two in the brick industry with significant impact on emission reductions and one in an ice cream factory. However, additional projects which also will have a significant impact in reducing CO₂ emissions are under implementation:

- P1. Ceramic kiln conversions at two brick companies
- P3. ESCO steam generation project at dairy manufacturer
- P4. Pulverized coal dosification systems at 20 SME brick companies

The decision taken last year to “widen the net” to expand the project opportunities by adjusting the Incentive Fund to facilitate use of these resources to co-finance necessary additional engineering studies to take projects beyond identification phase, and by broadening the network of partnerships with additional project developers has paid off. Together with the ongoing work in the Yumbo Industrial corridor and the case-by-case portfolio, the projects being structured by ESCOS, the

projects identified for PPF implementation, and the opportunities identified for combustion optimization, CCEP is confident that project completion rate will increase within the next year.

Table 18 - Task 3 Work Stream 2 Activities

Activities Work Stream 3.2	Description
Project identification and Development	CCEP has designed and is implementing the pipeline of projects included in table "Status of Task 3 EE Project Portfolio – 2014" For each specific project main results and milestones are detailed.

c. Work Stream 3.3 Technical and financial facilitation of selected projects

CCEP has identified technology providers and engineering consultants that are interested in providing equipment and/or services. CCEP’s team has worked jointly with vendors and technology providers in the identification and selection of the technological alternative that better suits the needs of each individual project.

In parallel, CCEP has identified financial mechanisms and institutions that offer services and products related to EE/RE projects, applicable to the types of projects under development. The figure below illustrates at least five financial mechanisms and institutions available in Colombia, as well as three international sources of financing aid that may provide additional funding and help improve the potential of implementation for not so profitable investments. Because it is still in pilot test phase, this figure excludes the agreement CCEP reached with UPME to work jointly on the Project Preparation Facility.

Figure 8: Identified Financial Mechanisms

IFC/BANCOLOMBIA	•First tier bank with special lines including the "línea de crédito sostenible" LCS
SECO	•Línea de crédito ambiental LCA - Swiss funding
Bancoldex	•Second tier bank structuring special lines for EE
MGM Innova	•ESCO with access to its own fund for sustainable energy projects
Banco Agrario	•Providing credit to small agroindustrial producers
Findeter	•Especial línea for EE and climate change
IDB/FOMIN	•Creating a financial facility to support and spur local ESCO's activities
OPIC	•Supporting technology transaction from US providers de USA
Eximbank	•Export-Import Bank of the United States
USAID DCA	• Fund that uses risk-sharing agreements to mobilize local private capital to fill small business financing gap
Fondo Nacional de Garantías	•GOC's entity that facilitates access to credit to micro and small enterprises by providing warranties.

Although CCEP has presented the availability of financing opportunities to all assisted companies, and has conducted EE assessments based on the financial aspects of each company, top management of some of these companies have taking longer than expected to commit with the implementation phases.

CCEP will continue the development of business and investment models and assisting/accompanying companies in structuring project finance of its project development cycle, engaging management and banking expertise from subcontractor Segura Consulting to supplement the technical expertise by subcontractor CNPML and other project developers.

The source of other financial support for CCEP's EE industrial projects is illustrated in the table below which indicates that a number of projects are benefiting from the green credit line and CCEP incentive funds.

Table 19 - Source of Financial Support

CCEP Project / Financial support	Green Credit Line Investments	MGM + Incentive Funds (studies)	Garper Energy + Incentive Funds (studies)	Camara de Comercio de Bogotá + Incentive Funds + Brick manufacturers
Ladrillera Los Cerros	X			
Durando & CIA Helados Tonny	X			
Ladrillera Santa Rita	X			
Ladrillera Sugres	X			
Ganados y Porcinos	X			
Ladrillera Pueblo Viejo	X			

CCEP Project / Financial support	Green Credit Line Investments	MGM + Incentive Funds (studies)	Garper Energy + Incentive Funds (studies)	Camara de Comercio de Bogotá + Incentive Funds + Brick manufacturers
IDEA	X			
COLANTA		X		
PELDAR		X		
Centro Comercial Gran Estacion			x	
Fenaltendas			x	
Ceramica Italia			x	
CAEM				X

d. Work Stream 3.4 Training, outreach, and advisory services

During its first year, CCEP embarked on a series of training programs and outreach activities aimed at three target audiences:

- EE/RE consultants and project developers, in order to improve their technical and financial project structuring capacity, and engage them in EE/RE project structuring through the Incentive Fund.
- Commercial and investment bankers to enhance their capacity to understand and correctly assess EE/RE projects based on their technical characteristics, an environmental and economic benefits and risks.
- National and international financial and policy-making institutions with interest in developing financial instruments and other actions addressing bottlenecks for private sector investment in EE/RE projects.

During 2013, our capacity building workshops focused on nation-wide dissemination of the EE/RE tax incentives resolution, methodology and application procedures. During the third year, CCEP will also complete and disseminate technical guides on energy efficiency and renewable energy technologies and investments for brick manufacturing and industrial, agro industrial and waste-to-energy biogas opportunities, through two publications and workshops aimed at respective industries and project developers.

Table 20 - Task 3 Work Stream 4 Activities

Activities Work Stream 3.4	Description
Workshops	<p>CCEP will continue providing training and workshops on EE/RE to broader audiences as described previously.</p> <p>Main result: Training people in EE/RE in technical and financial project structuring capacity.</p> <p>Milestone 1- October 2014: Participation in the II International Congress on Renewable Energy 9, 10 and 11 October at the Universidad Tecnologica de Pereira.</p> <p>Milestone 2 - July 2015. Participate or organize 2 workshops to industrial EE/ER investments.</p>

Activities Work Stream 3.4	Description
Technical guides	<p>During Q3 2014, CCEP finalized preliminary versions of two technical guides on EE opportunities and experiences for brick manufacturing and industrial, agro industrial and waste-to-energy biogas opportunities. These guides take information from the cases where CCEP provided technical and/or financial assistance. The guides detail major clean energy opportunities for the sectors and the potentials in reducing CO2 emissions.</p> <p>Main result: 2 sector technical guides</p> <p>Milestone 1- October 2014: Technical guides on efficient use of energy in the brick industry and use of biogas as a clean energy source completed, adjusted and submitted branding.</p> <p>Milestone 2- December 2014. Publication and distribution of the technical documents.</p>

e. *Specific project status and implementation plan of selected projects*

A brief synopsis of Task 3’s project pipeline, implementation status and pending steps for moving forward rapidly as of August 2014 is presented in the following table, which serves to illustrate the progress made, challenges confronted, steps taken to complete them in the shortest time possible and shifts in strategy proposed for second year work.

Table 21 - Status of Task 3 Energy Efficiency Project Portfolio –2014

Project	Description	Main Results	Implementation Stage	Milestone 1	Milestone 2	Milestone 3	Milestone 4
Los Cerros (Bricks/ Heat recovery)	The project involves using residual heat from a neighboring incinerator to avoid burning coal and achieving significant reductions in gas emissions, cost savings associated eliminating coal purchase cost, and creating healthier working conditions for workers.	The construction of new more spacious brick drying chambers with twelve axial fans to ensure proper hot air flow, as well as three centrifugal fans for injecting and extracting air from the drying rooms. Finally, a hot air duct with a total length of 90 meters to bring waste heat from the incinerator to the brick factory.	Completed	Sept 2015. Annual Technical Audit			
Helados Tonny (Foods/ Refrigeration)	The project involves designing and installing new more efficient refrigeration system for ice-cream factory which reduces 48% of electricity. New equipment was installed in February, 2013.	Installation of new cooling system which includes a centralized system. The centralized system has the capability of regulating cooling requirements according to production, which results in significant energy savings.	Completed	Sept 2015. Annual Technical Audit			
Santa Rita (Ceramic/ Combustion)	Objective was to improving temperature conditions within the furnace, leading to better heat distribution and a more uniform cooking/drying brick process, eliminating the manual feed of coal to the furnace, reducing GHG emissions and reducing emissions of particulate matter and sulfur oxides which also results in healthier working conditions for workers	Installation of an automatic solid fuel combustion system consisting of 4 stockers on each side of the kiln (8 in total). Combustion air is administered by a central fan operated by an electric motor and variable speed drive. The fuel and air delivery system are controlled by a computerized system which relies on kiln temperature readings.	Completed	Sept 2015. Annual Technical Audit			
Ladrillera Surges (Ceramic/Kiln change)	Improve temperature conditions within the furnace by changing its ceramic kiln.	Changing its ceramic kiln	Under implementation	Feb 2015 Project completion	Sept 2015. Annual Technical Audit		
Pueblo Viejo (Ceramic/ Combustion)	Improve temperature conditions within the furnace by changing its ceramic kiln	Brick tunnel oven	Project Formulation	Jan 2015. Project initiation	Aug 2015. Project completion	Sept 2015. Annual Technical Audit	
IDEA (Metallurgy /Furnace)	Implementing electric induction furnace instead of the cupola furnace that is used by IDEA in its metal casting	Replace Electric induction furnace	Project Formulation	Jan 2015. Project initiation	Aug 2015. Project completion	Sept 2015. Annual Technical Audit	

Project	Description	Main Results	Implementation Stage	Milestone 1	Milestone 2	Milestone 3	Milestone 4
Corridor Yumbo	Optimization of combustion in manufacturing firms located in the industrial corridor of Yumbo	Conducted 15 initial assessments in the following companies: Inducolma, Cobres de Colombia, Comestibles Aldor, Carvajal Pulpa y Papel, Diaco, Cervecería del Valle, Finca S.A., Centelsa, Smurfit Kappa Cartón de Colombia, Itacol, Incineradores Industriales S.A. ESP, MAC Johnson Controls Colombia S.A.S., Cartones del Valle del Cauca, Cajas Colombianas S.A.S., Centelsa	Project Formulation	July 2015 Formulation of 5 Projects completed	August 2016 Implementation of 5 projects completed		
Los Cerros (Bricks/ Heat recovery)	The project involves using residual heat from a neighboring incinerator to avoid burning coal and achieving significant reductions in gas emissions, cost savings associated eliminating coal purchase cost, and creating healthier working conditions for workers.	The construction of new more spacious brick drying chambers with twelve axial fans to ensure proper hot air flow, as well as three centrifugal fans for injecting and extracting air from the drying rooms. Finally, a hot air duct with a total length of 90 meters to bring waste heat from the incinerator to the brick factory.	Completed	Sept 2015. Annual Technical Audit			

Project	Description	Main Results	Implementation Stage	Milestone 1	Milestone 2	Milestone 3	Milestone 4
CAEM (Ceramic/ Combustion)	Automation of the feeding and combustion system for brick drying kilns	The program will install an automatic solid fuel (coal and/or coffee husk) combustion system	Under implementation	"Jun 2016. Project implementation completed	Sept 2016. Annual Technical Audit		
Colanta (Foods/ Biogas use) with MGM	Improve the wastewater treatment plant by using the methane generated by the UASB reactor in biogas for heat production. MGM Energy Services will conduct the detailed engineering studies	Biogas use for steam production	Under implementation	"Jun 2016. Project implementation completed	Sept 2016. Annual Technical Audit		
O-I Peldar (Glass producing company) with MGM	PELDAR is a global glass producing company. A new study will be implemented. This new study includes an energy efficient process for raw material preparation.	Energy Efficiency for raw material preparation	Project Re formulation	Dec 2014. Project final studies to decide if continues or not			
Ceramica Italia – with GARPER	EE investments and improvements, in various production lines	To determine in conjunction with the company and its priorities	Project Formulation	May 2015 Project completion	Sept 2015. Annual Technical Audit		

Project	Description	Main Results	Implementation Stage	Milestone 1	Milestone 2	Milestone 3	Milestone 4
Centro Comercial Gran Estacion - with GARPER	EE investments and improvements, in various production lines	To determine in conjunction with the company and its priorities	Project Formulation	May 2015 Project completion	Sept 2015. Annual Technical Audit		
Fenaltendas - with GARPER	Conduct detailed engineering studies in order to determine the efficiency and operating parameters of the electrical system, cooling and lighting systems in 300 stores affiliates to FENALTIENDAS, verify the correct selection of refrigerators and lighting and set the number, capacity, characteristics and degree of obsolescence of each of the said equipment	Implementation in 3,000 stores of energy saving improvement solutions	Project Formulation	Dec 2015 Project completion	Sept 2016. Annual Technical Audit		

2.3.3 Gantt chart

Figure 8: Task 3 Projects Gantt chart

Task 3 - EE Projects Activities	Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15	
	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	
Los Cerros (Ceramic/ Heat recovery)	[Gantt bar: Oct-14 to Sep-15]															
Project pre-selection	[Gantt bar: Oct-14 to Sep-15]															
Project opportunity assessment	[Gantt bar: Oct-14 to Sep-15]															
Project identification and formulation	[Gantt bar: Oct-14 to Sep-15]															
Project implementation	[Gantt bar: Oct-14 to Sep-15]															
Project monitoring and evaluation	[Gantt bar: Oct-14 to Sep-15]															
Helados Tonny (Foods/Refrigeration)	[Gantt bar: Oct-14 to Sep-15]															
Project pre-selection	[Gantt bar: Oct-14 to Sep-15]															
Project opportunity assessment	[Gantt bar: Oct-14 to Sep-15]															
Project identification and formulation	[Gantt bar: Oct-14 to Sep-15]															
Project implementation	[Gantt bar: Oct-14 to Sep-15]															
Project monitoring and evaluation	[Gantt bar: Oct-14 to Sep-15]															
Santa Rita (Bricks/Combustion optimization)	[Gantt bar: Oct-14 to Sep-15]															
Project pre-selection	[Gantt bar: Oct-14 to Sep-15]															
Project opportunity assessment	[Gantt bar: Oct-14 to Sep-15]															
Project identification and formulation	[Gantt bar: Oct-14 to Sep-15]															
Project implementation	[Gantt bar: Oct-14 to Sep-15]															
Project monitoring and evaluation	[Gantt bar: Oct-14 to Sep-15]															
Ladrillera Sugres	[Gantt bar: Oct-14 to Sep-15]															
Project pre-selection	[Gantt bar: Oct-14 to Sep-15]															
Project opportunity assessment	[Gantt bar: Oct-14 to Sep-15]															
Project identification and formulation	[Gantt bar: Oct-14 to Sep-15]															
Project implementation	[Gantt bar: Oct-14 to Sep-15]															
Project monitoring and evaluation	[Gantt bar: Oct-14 to Sep-15]															
Pueblo Viejo	[Gantt bar: Oct-14 to Sep-15]															
Project pre-selection	[Gantt bar: Oct-14 to Sep-15]															
Project opportunity assessment	[Gantt bar: Oct-14 to Sep-15]															
Project identification and formulation	[Gantt bar: Oct-14 to Sep-15]															
Project implementation	[Gantt bar: Oct-14 to Sep-15]															
Project monitoring and evaluation	[Gantt bar: Oct-14 to Sep-15]															
IDEA	[Gantt bar: Oct-14 to Sep-15]															
Project pre-selection	[Gantt bar: Oct-14 to Sep-15]															
Project opportunity assessment	[Gantt bar: Oct-14 to Sep-15]															
Project identification and formulation	[Gantt bar: Oct-14 to Sep-15]															
Project implementation	[Gantt bar: Oct-14 to Sep-15]															
Project monitoring and evaluation	[Gantt bar: Oct-14 to Sep-15]															
Corridor Yumbo	[Gantt bar: Oct-14 to Sep-15]															
Project pre-selection	[Gantt bar: Oct-14 to Sep-15]															
Project opportunity assessment	[Gantt bar: Oct-14 to Sep-15]															
Project identification and formulation	[Gantt bar: Oct-14 to Sep-15]															
Project implementation	[Gantt bar: Oct-14 to Sep-15]															
Project monitoring and evaluation	[Gantt bar: Oct-14 to Sep-15]															

Task 3 - EE Projects Activities		Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15
		1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
Corridor AMVA																
Project pre-selection																
Project opportunity assessment																
Project identification and formulation																
Project implementation																
Project monitoring and evaluation																
CAEM																
Project pre-selection																
Project opportunity assessment																
Project identification and formulation																
Project implementation																
Project monitoring and evaluation																
Colanta																
Project pre-selection																
Project opportunity assessment																
Project identification and formulation																
Project implementation																
Project monitoring and evaluation																
Peldar																
Project pre-selection																
Project opportunity assessment																
Project identification and formulation																
Project implementation																
Project monitoring and evaluation																
Ceramica Italia																
Project pre-selection																
Project opportunity assessment																
Project identification and formulation																
Project implementation																
Project monitoring and evaluation																
Centro Comercial Gran Estación																
Project pre-selection																
Project opportunity assessment																
Project identification and formulation																
Project implementation																
Project monitoring and evaluation																
Fenaltindas																
Project pre-selection																
Project opportunity assessment																
Project identification and formulation																
Project implementation																
Project monitoring and evaluation																

3. CCEP'S COMMUNICATIONS AND OUTREACH UNDERTAKINGS

Now that project implementation gains additional momentum, this work plan addresses our third year communications approach to generate compelling materials to document and highlight the journey from project design to project implementation and closure of key CCEP's projects.

During the first two years of the Program, CCEP's outreach and communication strategy has focused, primarily, on documenting and providing information to USAID staff and targeted audiences on mostly project creation and design activities. However, throughout 2015, many of the projects already initiated will be brought to implementation and completion stages, creating new communication opportunities that will require adjustments both to the products and scope of the current strategy.

The key objective during CCEP's third year will be to expand public awareness and knowledge of our Program and to consolidate the communication strategy as a tool to support the effective completion of CCEP's projects. Thus, our approach will focus on ensuring that stakeholders and the public at large understand the results and impact generated by our Program in beneficiary communities, institutions and industries, by designing high-impact information pieces that will be disclosed and distributed not only through our official website but also through other national, regional and local communication channels.

During its third year, CCEP plans to focus on the activities described in this section using the above updated framework.

3.1.1 Consolidating communications distribution network

The main objective of this activity is to increase understanding of CCEP's impact and results by establishing appropriate distribution channels and maximizing the dissemination of information.

An effective communication strategy will need to address key target audiences and pool communication resources from other institutions and partners to guarantee a widespread dissemination and facilitate broad communication of the Program's achievements. This will be accomplished by building a comprehensive distribution network database and establishing contact points with communications offices from other organizations, institutions of the energy sector, companies, national and local media liaisons, universities, NGOs, and other potential interested parties.

The main result of this activity will be a consolidated communications network database actively managed.

3.1.2 Enhancing project visibility strategy

The main objective of this activity is to heighten recognition and visibility of CCEP's projects throughout their implementation process. During CCEP's third year, increased attention will be paid to ensure that all projects achieve a higher level of visibility throughout their implementation process. Two specific mechanisms will be used to carry-out this strategy:

- **Transforming the website into a publicity tool for our projects** - The website will be improved to include additional user-friendly and easy-to-use communications content and materials for each one of CCEP's selected projects. Accordingly, each project will be displayed through a comprehensive profile that will include the following sections: a project overview; a project summary in downloadable PDF format with the objectives, site description and location, implementation plan and expected results; downloadable PDF success stories; links to national and local press coverage; properly branded supporting documentation such as reports, technical documents, power point presentations and guides in PDF formats; and a project photo gallery. Additionally, efforts will be made to distribute and share these documents with partnering institutions and entities.
- **Communications and branding kit** - CCEP's communications office will coordinate with USAID the design, production and distribution of a communications and branding kit comprised of: CCEP's general brochure; a branding and marking format to be co-developed with the implementing partner for each project; visibility banners; posters tailored to the characteristics and needs of each project; and marking plaques with USAID's standard identity. These materials will be used and distributed during project construction and installation activities, related events and meetings, and will also be accessible via website.

The main result of this activity will be strong project profiles and supporting documentation and properly designed communication/branding kits.

3.1.3 Producing high-impact communication pieces and press coverage

The main objective of this activity is to expand CCEP's audience and reach out through high-impact promotional pieces and active interaction with the media. Although website-based communications provide a cost-effective manner to deliver timely information, increased efforts will be deployed to reach a wider audience by designing high-impact communication materials and promoting contacts and information sharing ties between the Program and the media as described below.

- **Project videos**- CCEP will coordinate the planning, documentation, production and distribution of three project videos with USAID's communications office, which has committed funds and contracted a professional photographer/video maker to support USAID programs. The first video will be displayed in the Bogota Botanical Garden project site, to provide a simplified and attractive visual representation of the biomass gasification process. The second and third videos will be designed to generate awareness of our water pumping project with Fundacion Cerrejon Guajira Indigena and one of our MHP projects. These videos will be produced in hard and electronic copies and hosted in web links to facilitate and encourage a widespread distribution.
- **Press coverage** - The Communications office will be proactive in promoting press coverage of CCEP's projects and events at the national, regional and local levels. This will be achieved by offering the media direct access to project staff, beneficiaries and locations, or by reacting to requests, issuing press statements, articles, background information or up-to-date communication kits. All interactions with the media will be coordinated beforehand with USAID's Communication Office to ensure that the messages and documents produced comply with USAID's branding and marking policies and procedures.

The main results of this activity will be three project videos and press coverage articles.

In summary, our activities work stream for Year three follows.

Activities	Description
<p>RE and EE heightened awareness and outreach activities</p>	<p>During the third year CCEP envisions continuing and building up on the activities carried out, by assigning more time and budget to design and host various workshops and awareness events to promote renewable energy (RE), energy efficiency (EE), best practices, and regulation to the energy market.</p> <p>Main results: Design and host various national, regional, technology and/or subsector- specific workshops and awareness events, documentaries or publications on the social, environmental and economic benefits of renewable energy, energy efficiency best practices and examples of successful regulatory and RE/EE market development.</p> <p>Milestone 1 – First semester of 2015. Co-finance or organize at least 1 event related to RE/EE projects and strategies, and/or Law 1715 of 2014 implementing regulations or policies. Distribution campaign of CCEP media kits (CCEP brochure, online project profiles, success stories and others) to partnering entities and the national/regional media. Coordinate distribution of one video for the Fundacion Cerrejon Guajira Indigena water pumping project.</p> <p>Milestone 2 – Second semester of 2015. Co-finance or organize with GOC entities involved a national or regional event to socialize the impact of the Law 1715 of 2014, specifically regarding the results of regulatory development for the incorporation of excess power from self-generators into the grid. Coordinate the production and massive distribution of at least one video for one of CCEP's MHP projects.</p>