



Colombia

Programa de las Naciones Unidas para el Desarrollo PNUD



Unidad de Planeación Minero Energética

Ministerio de Minas y Energía

Título del Proyecto

CO-EFICIENCIA: MEJORA DE LA EFICIENCIA ENERGÉTICA EN EDIFICIOS

Este proyecto pretende promover la eficiencia energética en edificios y fortalecer el desarrollo de una aproximación de mercado en relación al actual stock de edificios. El objetivo del proyecto asegurará que la energía se utiliza de manera más efectiva y racional en Colombia, promoviendo además la transformación de los mercados de eficiencia energética de los edificios apoyando la eliminación de barreras institucionales, políticas y de capacidad técnica que limitan la adopción masiva de este tipo de medidas. El proyecto promoverá también el reemplazo de 13 grandes equipamientos de aire acondicionado - chillers- muy ineficientes energéticamente y que utilizan CFCs, en una sinergia con el programa gubernamental de MAVDT/UTO que tiene el apoyo del Fondo Multilateral del Protocolo de Montreal (MLF) para las sustancias agotadoras de la capa de ozono. Este proyecto resultará en una reducción directa de aproximadamente 62.000 toneladas de CO2 equivalente y de una reducción de emisiones indirectas de 274.000 toneladas de CO2 equivalente en un periodo de 20 años.

PÁGINA DE FIRMAS

País: **COLOMBIA**

Resultado (s) del MANUD / Indicador (es):

Capacidades nacionales fortalecidas para apoyar un desarrollo competitivo y sostenible que tiene en consideración particularidades regionales y ventajas comparativas

Resultado (s) Esperado (s) / Indicador (es):

Instituciones públicas y organizaciones de la sociedad civil fortalecidas para formular e implementar programas e iniciativas de gestión ambiental que garanticen la provisión y conservación de servicios ambientales con énfasis en procesos de conservación, restauración y uso sostenible de los ecosistemas, provisión y racionalización y uso eficiente de la energía y gestión integrada del agua.

Producto (s) Esperado (s) / Objetivos Anuales:

Gobierno y sector privado con capacidades fortalecidas para diseñar estrategias, programas y proyectos que promuevan la eficiencia energética y la eficacia empresarial.

Indicador 1: iniciativa prioritaria o proyecto para la provisión, racionalización y uso eficiente de la energía formulado, financiado y acompañado en su implementación.

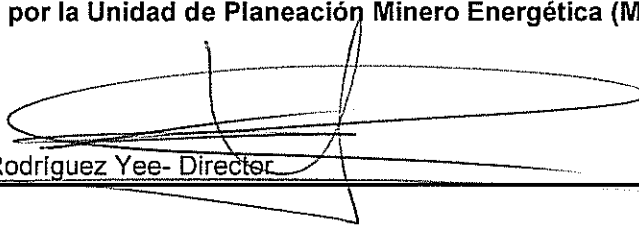
Asociado en la Implementación:

Unidad de Planeación Minero Energética (UPME),
Ministerio de Energías y Minas de Colombia
(designated institution/Executing agency)


Período del Programa: 2009-2012
 Componente del Programa: Pobreza y desarrollo sostenible
 Denominación del Proyecto: Co-Eficiencia: Mejora de la Eficiencia Energética en Edificios
 ID del Proyecto: 00070467
 Duración del Proyecto: 3 años
 Modalidad de Gestión: Ejecución nacional - NEX

Presupuesto Total 975.000 USD
 Recursos asignados: _____
 • Gobierno _____
 • Ordinarios _____
 • Otros:
 ○ GEF 975.000 USD
 ○ Donante _____
 ○ Donante _____
 • Contribuciones en especie 1.115.000 USD
 Presupuesto sin respaldo: _____

Aceptado por la Unidad de Planeación Minero Energética (MME):


 Ricardo Rodríguez Yee- Director

Aceptado por el PNUD:


 Bruno Moro – Representante Residente

Representante Residente PNUD

3/11/2009

SECCIÓN I: Narrativa

PARTE I: Análisis de Situación

El consumo de energía en Colombia ha aumentado un 33% entre 1990 y 2005 y la producción primaria de este recurso se incrementó alrededor de un 3,5% anualmente durante el mismo periodo¹. El país muestra una clara tendencia al uso del carbón para la producción de energía pasando de un 28,7% a un 46,9% del total de la producción primaria de energía entre 1990 y 2005. El consumo eléctrico ha ido aumentando alcanzando una tasa de 4,07% en 2006.

En términos de un escenario de “business-as-usual”, se estima que el consumo de energía en el sector residencial aumentará un 5.1 % y el sector comercial un 6.5 % entre 2005 y 2025 donde el 83% de la energía será eléctrica.

En 2001, Colombia estableció la Eficiencia Energética (EE) como una prioridad nacional a través de la “Ley de la Promoción de la Eficiencia Energética y las Energías Renovables”². Entre otras cosas, esta Ley provee de un marco para diseñar e implementar el “Programa Nacional para el Uso Racional y Eficiente de la Energía y para las Energías Renovables”(PROURE)³. La Ley exige al Estado: (i) establecer condiciones legales, técnicas, económicas y financieras, incluyendo incentivos financieros (ii) promover proyectos de EE y Energías Renovables, (iii) promover la investigación en EE; y (iv) desarrollar estrategias para sensibilizar a los ciudadanos y ciudadanas en relación a la EE.

A pesar del gran potencial de la EE en la industria colombiana y en los edificios privados y públicos, la Ley todavía no ha producido la creación de un mercado con diseños, equipamientos y servicios energéticos más eficientes. En diciembre de 2003, el Gobierno aprobó el Decreto 3683/2004 que estableció la “Comisión Intersectorial para el Uso Racional y Eficiente de la Energía y las Fuentes de Energía No Convencionales (CIURE)” como una entidad asesora en el Ministerio de Minas y Energía y con la Unidad de Planeación Minero Energética (UPME) actuando como su Secretaría Técnica⁴. El Decreto define las reglas generales y el alcance del programa POURE, pero es menos explícita en relación a las estrategias de implementación y los mecanismos operativos.

El uso final eficiente de la energía es un factor clave para mejorar la relación costo-efectividad de la economía nacional y para controlar los costos de energía de los sectores comerciales, público y residencial. Colombia está comprometida a la conservación del medio ambiente local y global controlando las emisiones de Gases de Efecto Invernadero (GEI) y la reducción de las descargas en el nivel local. A pesar del peso de la hidroeléctrica en la matriz de generación de energía⁵, la energía térmica es importante para responder a unos picos de demanda creciente y como un seguro en años con pluviosidad por debajo de la media. Mientras que las reservas de carbón son muy grandes, la producción

¹ Ministerio de Minas y Energía, Plan Energético Nacional 2006-2025, Colombia 2007

² Ley 697/2001, 3 Octubre 2001.

³ Programa de Uso Racional y Eficiente de la Energía y demás formas de Energías No-convencionales (PROURE).

⁴ La Unidad de Planeación Minero Energética (UPME) del Ministerio de Minas y Energía (MME); la UPME está a cargo de las actividades del gobierno relacionadas con la EE y las Energías Renovables, en particular la planeación estratégica, los estudios sectoriales y la promoción de programas desde 1995.

⁵ Colombia es el mayor productor y exportador de carbón de Latinoamérica (las reservas eran de 7.300 Mmst en 2005). Las reservas comprobadas de petróleo eran de 1,45 millones de barriles, las reservas de gas 4,0 Tcf (2007); en hidroeléctrica, Colombia es el segundo país después de Brasil en América Latina. 78% (42.523 GWh) del total de la electricidad del país (54.855 GWh) es producida por recursos hídricos comparado con el 17,8% (9.753 GWh) de plantas térmicas (el resto es producción privada para auto-consumo). En relación a la capacidad generadora 66% (8.532 MW) es hidroeléctrica y 34% (4.353) es térmica (gas natural gas o carbón).

de petróleo está disminuyendo. Con una demanda de energía creciente⁶, la conservación de la energía y el uso de energías renovables (principalmente biomasa –etanol- y energía eólica) son estratégicos para diversificar la matriz energética nacional.

La falta de una entidad nacional fuerte con un mandato para ejecutar programas de EE se ha identificado como la principal barrera en la transformación del mercado hacia tecnologías de EE en Colombia. Además, en ausencia de una demanda por soluciones más eficientes energéticamente, los profesionales como arquitectos y los ingenieros no tienen conocimientos específicos sobre este tema ni sobre las oportunidades, costos y beneficios de las tecnologías de EE y la gestión de la energía en edificios. Durante la Fase de Preparación del Proyecto (Project Preparation Phase-PPG), el análisis de barreras presentado preliminarmente en el PIF fue revisado y priorizado. Sobre la base de este análisis, el proyecto se enfocará principalmente a las barreras institucionales, políticas y de capacidad técnica.

En este contexto, las barreras se han priorizado como sigue:

Barreras institucionales y políticas

Como indica el Plan Energético Nacional (NEP) 2006-2025, las estructuras institucionales del Gobierno son complejas e inadecuadas para implementar con efectividad políticas de EE. Esta es la mayor barrera, que explica por qué los avances en legislación no se han traducido en resultados tangibles. La UPME es más una unidad administrativa adjunta al MME sin un mandato explícito para implementar políticas y programas de EE. Sin una agencia pública o privada correctamente posicionada y con facultades para preparar y ejecutar programas de EE, los actores del mercado no van a cambiar. La importancia y la eficacia de una Agencia Nacional de EE ha sido demostrada por la experiencia de otros países de la región como, por ejemplo, México.

En la situación actual, el desarrollo de políticas ocurre solo al más alto nivel. Es necesaria regulación más específica para ayudar a crear un ambiente propicio, facilitando la sensibilización, promoviendo la demanda y apoyando la viabilidad económica de las inversiones en medidas y equipamientos de EE. Sin un marco regulatorio claro y estable, los riesgos financieros relacionados con las inversiones en EE siguen siendo altos y los actores del mercado seguirán escogiendo soluciones convencionales.

Barreras de capacidad técnica

En ausencia de una demanda de soluciones de EE, los profesionales como arquitectos o ingenieros no tienen el conocimiento técnico ni analizan las oportunidades, costos y beneficios de las tecnologías de EE y de gestión de la energía en edificios. Sin insumos técnicos, los constructores no prestan atención a la EE ya que ésta no está incluida en el código constructivo actual. Sin una demanda del mercado, la EE no es un criterio utilizado en las estrategias de venta de los proveedores de equipamientos. Actualmente, solo unas cuantas universidades y escuelas técnicas ofrecen algún tipo de formación sobre EE, con un enfoque en procesos industriales⁷.

Sin desestimar el progreso realizado a través del Programa CONOCE, la falta de estándares y de su aplicación constituye la principal barrera técnica. Sin referencias específicas relacionadas con la calidad y el funcionamiento de los equipamientos, equipos y los edificios, no tendrá lugar ninguna transformación de mercado hacia soluciones y tecnologías de EE.

⁶ El Plan Nacional de Energía 2006-2025 estima un aumento del uso de la energía de un 49% en este periodo, lo que supone unas emisiones adicionales de CO₂ de 27 millones de toneladas.

⁷ Las Universidades de Cali (Autónoma de Occidente), Barranquilla (Universidad del Atlántico) y Bogotá (La Salle) ofrecen especializaciones y diplomas en EE que responden a los requerimientos de las industrias de las respectivas regiones.

Barreras de información y sensibilización

Sin un marco de políticas apropiado y unos estándares técnicos aplicados, la demanda por soluciones de EE no puede desarrollarse: no hay un mensaje claro para los actores del mercado y el público general. En consecuencia, el material promocional e informativo de los equipamientos no incluye información sobre aspectos de EE e impactos ambientales. En relación a los equipos de los hogares, los usuarios finales dependen de los fabricantes o los vendedores para la información. Las etiquetas de energía de los equipamientos importados de otros países tienden a crear confusión entre los compradores. Los primeros pasos hacia la información pública se han definido en el programa PROURE. Con la creación de una Agencia Nacional de EE, las campañas de información pueden ser implementadas de manera efectiva y sostenible. Este proyecto estará enfocado específicamente a edificios a apoyar medidas de EE en industrias. Está en fase de preparación un proyecto paralelo y complementario que se enfocará en la introducción de estándares y etiquetas de EE en los aparatos eléctricos en Colombia: “Eficiencia energética en la estandarización y etiquetado en Colombia⁸”.

Barreras del modelo de implementación y financieras

Hay algunas experiencias limitadas en Colombia relacionadas con la financiación de contratos de desarrollo energético o financiaciones directas a equipamientos y procesos de EE en la industria. A pesar de que algunos bancos han mostrado interés, las instituciones financieras no están sensibilizadas ni poseen el conocimiento técnico para asesorar inversiones en EE. Los proveedores de equipamientos de HVAC han manifestado interés de trabajar con contratos de rendimiento, pero dada la falta de demanda y los precios tan bajos de la energía es muy difícil desarrollar este mercado. Claramente se necesita una aproximación proactiva para aumentar el acceso a capital financiero bajo condiciones suficientemente atractivas. Esto solo se conseguirá con desarrollos de políticas consistentes, idealmente bajo el liderazgo de una entidad nacional.

En el sector de la construcción, la falta de demanda de servicios y tecnologías de EE está acompañada de una falta generalizada de capacidades y servicios de acompañamiento como: asesoramiento profesional de parte de los proveedores de equipamiento y consultores independientes, auditorías energéticas y compañías de servicios energéticos (ESCOs). Por tanto, más que un servicios de provisión de soluciones de EE de todo tipo, es necesario un amplio rango de servicios para cada grupo de beneficiarios o clientes incluyendo: (i) proveedores; (ii) entidades financieras; (iii) profesionales de la energía; (iv) consultores; y (v) compañías especializadas en la provisión de servicios de energía (ESCOs).

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PARTE II: Estrategia

Basado en el análisis de barreras presentado anteriormente, este Proyecto se enfocará principalmente hacia las barreras institucionales, políticas y de capacidad técnica, y apoyará a PROURE a mejorar la sensibilización y la disponibilidad de información entre los actores clave. En relación al desarrollo de políticas, algunas actividades revisarán las modalidades de provisión de servicios de EE. Un importante objetivo del proyecto es el establecimiento de una Agencia Nacional de Eficiencia Energética con un mandato apropiado⁹. Como un paso intermedio, el Proyecto aumentará la capacidad de trabajo en EE en la UPME; la incorporación de este personal en la Agencia Nacional de EE es parte de la estrategia del Proyecto.

El proyecto también promoverá la operacionalización de los créditos existentes, ej. Bancoldex-URE, para financiar específicamente los proyectos de reemplazo de chillers y apoyar a sus dueños a acceder a financiación. Un factor limitante es la falta de capacidad específica en el personal del banco para entender y evaluar propuestas técnicas en este tema. El Proyecto se encargará de esta barrera proveyendo de capacitación especializada en aspectos financieros y riesgos relacionados con las inversiones en EE y apoyando una sensibilización creciente en el tema.

Además de créditos dedicados a este tema, se necesitarán incentivos específicos para aumentar la tasa de retorno de la inversión en medidas de EE, como una depreciación acelerada, construcciones con usufructos financieros y posibles ajustes de la estructura de tarifas. El Proyecto revisará la situación presente y hará recomendaciones como insumos para el desarrollo de políticas.

Un elemento clave en la estrategia del proyecto en la sinergia con el Fondo Multilateral del Protocolo de Montreal sobre sustancias agotadoras de la capa de ozono. La Unidad Técnica de Ozono (UTO)¹⁰ ha presentado junto con el PNUD un proyecto para la gestión integrada de chillers basados en CFC¹¹ a este Fondo. Basado en el estudio de edificios de grandes proporciones¹², el Ministerio ha propuesto dar asistencia para el reemplazo de 13 grandes chillers, ineficientes en el uso de energía y basados en CFC para mostrar la factibilidad de este tipo de inversiones en diferentes perfiles de usuarios finales. El presente Proyecto aprovechará esta oportunidad para generar resultados tangibles en el sector de edificaciones preparando e implementando pilotos. Las experiencias de este proyecto podrán ser utilizadas para el desarrollo de políticas, particularmente en relación a los actores del sector privado y de financiación de construcciones.

Este Proyecto creará un marco mejorado institucional, legal y regulatorio para promover la EE en edificios en Colombia. La estrategia es actuar sobre temas institucionales, legales y regulatorios, así como de capacidad técnica para lo siguiente:

- Fortalecer las instituciones de Gobierno;
- Desarrollar políticas y regulaciones;
- Desarrollar capacidades en los actores del mercado;
- Ejecutar un piloto de inversión (reemplazar chillers ineficientes y basados en CFC); y
- Seguimiento y evaluación del Proyecto.

⁹ Las Entidades público-privadas pueden establecerse sin nueva legislación. El proyecto, sin embargo, apoyará la constitución de una Agencia totalmente pública lo que requiere de la aprobación de una propuesta de Ley.

¹⁰ Es parte del Ministerio de Ambiente, Vivienda y Desarrollo Territorial (MAVDT)

¹¹ The UTO/MAVDT /PNUD "Proyecto demostrativo para el desarrollo integral del subsector de chillers en Colombia, priorizando la aplicación de tecnologías libres de CFC y eficientes energéticamente para el reemplazo de chillers basados en CFC ", 3 de Octubre de 2005

¹² Incluido en la Sección IV, Parte VI

Metas, objetivos y resultados del proyecto

Meta y Objetivo del Proyecto

La meta del proyecto es: “Reducir las emisiones de gases de efecto invernadero del sector de edificaciones de Colombia a través de la implementación de un paquete integrado de actividades que mejoren la eficiencia energética de edificios comerciales, públicos y residenciales (una meta asociada es reducir las emisiones de sustancias agotadoras de la capa de ozono de los chillers que utilizan CFC).”

El objetivo del proyecto es: “Promover la eficiencia energética en edificios eliminando barreras institucionales, legales y regulatorias así como de capacidad y técnicas que actualmente limitan su adopción generalizada.”

Beneficios ambientales

Este Proyecto generará beneficios ambientales a modo de emisiones evitadas de CO₂ del sector eléctrico colombiano. Las emisiones evitadas son directas e indirectas:: (A) Beneficios directos del reemplazo de 13 grandes chillers basados en CFC e ineficientes en el uso de energía; (B) Beneficios indirectos: (i) debido a la replicación del piloto en reemplazo de chillers; y (ii) asociados a la contribución del proyecto a la transformación del mercado hacia tecnologías de EE en el sector de la construcción y, específicamente, por la creación de la Agencia Nacional de EE. Los beneficios directos se estiman en 62.000 toneladas de CO₂ evitadas en el tiempo de duración económica de las inversiones (20 años) y teniendo en cuenta un cambio en la línea de base del 33%. Los beneficios indirectos, resultado de la replicación del reemplazo de chillers, son 124.000 T CO₂. La energía eléctrica ahorrada es de 88.600 MWh (directo) y 177.200 MWh (indirecto, a través de la replicación). Los beneficios indirectos como resultado de la transformación del Mercado se estiman (de manera conservadora) en unas 150.000 T CO₂; los ahorros de energía resultantes son 685.000 MWh. Estos beneficios ambientales del proyecto contribuyen a la Prioridad SPI de la Estrategia de Cambio Climático del GEF.

Resultados del Proyecto:

Outcome #1 Instituciones de gobierno responsables de promover la eficiencia energética fortalecidas.

Output #1.1 Un grupo de EE ad-hoc establecido en la UPME. Se establece un grupo técnico en la UPME como un primer paso adelante para la constitución de la Agencia Nacional de EE. El apoyo del PNUD/GEF consistirá en la asignación de dos consultores nacionales cualificados; el Gobierno de Colombia asignará personal propio a este equipo para generar la capacidad técnica y de ejecución necesaria para llevar a cabo los temas técnicos del proyecto y preparar los pasos necesarios para la creación de la Agencia Nacional de EE. Se espera que este grupo esté confirmado por 4 personas que trabajarán al menos 2,5 años.

Output #1.2 Una Agencia Nacional de EE con mandato para implementar y promover programas y políticas de EE es designada y una propuesta de Ley es presentada para su creación. Este resultado incluye la preparación de la propuesta de Ley para permitir la creación formar de la Agencia Nacional de EE, cubriendo lo siguiente: (i) el mandato legal de la Agencia; (ii) su relación con las entidades de Gobierno: MME, UPME y CIURE, y (iii) medios de largo plazo para su financiación. El Proyecto preparará un plan de negocios para la Agencia, definiendo su estructura interna, el personal y los requerimientos presupuestales. La aceptación formal de la Agencia depende del Congreso de Colombia y, por tanto, está por fuera del ámbito de este Proyecto. La estrategia del Proyecto, de todos

modos, incluirá la promoción de un apoyo político fuerte para fortalecer la base para el desarrollo e implementación de programas de EE.

Outcome #2 Políticas, regulaciones y estándares para promover la eficiencia energética en edificios desarrollados e implementados.

Output #2.1 El Programa PROURE ha sido fortalecido por el desarrollo e implementación de regulaciones específicas para promover la EE en edificios, incluyendo: (i) provisión de servicios de energía para edificios públicos y privados; (ii) auditorías de energía; (iii) certificación de profesionales de energía; (iv) compañías de servicios energéticos (ESCOs). Este resultado dará apoyo al programa PROURE para preparar regulación específica que promueva la EE en edificios, incluyendo: (i) aplicación de estándares de EE para edificios residenciales y comerciales y grandes equipamientos de edificios; (ii) auditorías de energía, (iii) certificación de profesionales en EE; (iv) provisión de servicios de energía (contratos por rendimiento, ESCOs). El resultado contribuirá a otros programas concebidos como parte de PROURE. Se espera que la CIURE tendrá un importante papel en la relación otras entidades de Gobierno y con el sector privado.

Output #2.2 Estándares nacionales para la EE en edificios desarrollados, incluyendo auditorías de energía y gestión de la energía. Este resultado apoyará el mayor desarrollo del trabajo en estándares de EE en el marco de PROURE desarrollando estándares de consumo de energía para edificios residenciales, públicos y comerciales en Colombia. El trabajo se apoyará en el progreso hecho en la región en este tema (Brasil, Chile y México), los Estados Unidos de América y la Unión Europea y será llevado a cabo en colaboración con el Instituto Colombiano de Estándares Técnicos y Certificación (ICONTEC).

Output #2.3 Incentivos para la inversión en EE analizados por la UPME como insumo para el desarrollo de políticas. Este resultado incluye la realización de una encuesta (informe) de las posibles modalidades de incentivos financieros para la inversión en EE en el sector de edificios. El trabajo incluye una revisión de las experiencias existentes de crédito de Bancoldex-URE y hará recomendaciones para su mejora.

Outcome #3 Conocimiento técnico y capacidades de los actores clave mejoradas.

Output #3.1: Sensibilización e información sobre EE entre ingenieros de construcción, arquitectos, funcionarios de cumplimiento, , proveedores y consumidores de productos de EE, mejorada. El proyecto elaborará materiales de capacitación e implementará cursos sobre EE en edificios para profesionales clave del sector, así como para proveedores de productos y grandes clientes potenciales: (i) arquitectos, ingenieros; (ii) proveedores de energía, funcionarios de cumplimiento y auditores; (iii) propietarios de edificios y financiadores. Los temas incluyen la gestión de la energía en edificios, la auditoría energética, análisis técnicos y económicos de proyectos de EE, modelos comerciales como los contratos de rendimiento energético, ahorros compartidos, usufructos, etc. Los cursos de capacitación serán desarrollados y organizados en cooperación con Universidades, asociaciones profesionales (ACAIRE) y la industria. Al menos 75 profesionales serán capacitados.

Output #3.2 Un programa de asistencia técnica para el reemplazo de chillers ineficientes y basados en CFC implementado. Un programa de asistencia técnica para el reemplazo de chillers ineficientes y basados en el uso de CFC en edificios comerciales y públicos será implementado para los chillers ubicados en la zona climática caliente ("piso térmico 1"). El resultado contribuirá a (i) la capacidad técnica de los dueños y operadores de los chillers, (ii) el desarrollo de herramientas de cálculo y asistencia directa para analizar la factibilidad de proyectos HVAC; (iii) la relación entre

fabricantes de HVAC y consumidores potenciales en el sector público y privado, y (iv) el desarrollo de guías técnicas para los profesionales de la refrigeración. El programa de asistencia técnica se diseñará e implementará en cooperación con los fabricantes de chillers de la Asociación Colombiana de Aire Acondicionado y Refrigeración (ACAIRE).

Output #3.3: Guías del proyecto, herramientas analíticas y documentación de los productos compiladas y diseminadas. Este resultado pretende desarrollar guías y herramientas analíticas para promover el reemplazo de grandes chillers, basados en el uso de CFC, en colaboración con los fabricantes y distribuidores. Estas guías estarán disponibles para los actores más importantes.

Outcome #4: Ahorros energéticos del reemplazo de los chillers llevados a cabo

Output #4.1: Una selección de mecanismos preparados para solicitar propuestas de proyecto para el reemplazo de los chillers, incluyendo el desarrollo de un portafolio de replicación. Este Proyecto incluye la preparación e implementación de un mecanismo transparente de selección de los chillers a ser reemplazados. Después de la evaluación, los proyectos escogidos recibirán apoyo, incluyendo apoyos financieros del Gobierno de Colombia (es decir, el Proyecto) para reemplazar chillers obsoletos por equipamientos modernos y eficientes. El mecanismo incluirá acceso mejorado a créditos y apoyo técnico directo durante la preparación del proyecto. Se prevé que el mecanismo seguirá siendo usado por la Agencia Nacional de EE después de la terminación del proyecto

Output #4.2: Inversiones confirmadas para los proyectos de 13 chillers con cofinanciación comprometida (créditos) y apoyo del Fondo Multilateral del Protocolo de Montreal. Este resultado se refiere al reemplazo de los 13 chillers que será apoyado a través del proyecto de la UTO aprobado por el Fondo Multilateral. Este Fondo proveerá de apoyos financieros parciales a modo de estudios de factibilidad. Los fondos del GEF para este Proyecto se utilizarán para el apoyo técnico y la promoción (solamente el 2% del total de esa componente). Las inversiones privadas tendrán lugar a través del acceso a créditos de las líneas de préstamo de Bancoldex y posiblemente de la inversión propia de los dueños de los chillers

Output #4.3 Informes de desarrollo operativo del reemplazo de los 13 chillers documentados: Este resultado se llevará a cabo a través del trabajo de seguimiento y evaluación del desarrollo del reemplazo de los chillers y se evaluará el ahorro de energía incluyendo la reducción de emisiones de CO2 asociada.

Outcome #5 Plan de seguimiento y evaluación implementado

Output #5.1 Plan de seguimiento y evaluación implementado. Este resultado cubre la implementación del plan de seguimiento y evaluación detallado en la Parte IV de acuerdo con las guías del PNUD y el GEF. Complementariamente a los requerimientos del PNUD/GEF, el Gobierno de Colombia (MME-UPME) dará seguimiento al Proyecto de acuerdo a sus propios procedimientos internos y estándares de calidad.

Output #5.2 Lecciones aprendidas recogidas, preparadas y divulgadas. A través de este resultado se recogerán las experiencias útiles del Proyecto para el Gobierno Nacional y el PNUD /GEF como insumo para futuros programas.

PART III: Arreglos de Gestión

El proyecto será implementado bajo la modalidad de ejecución nacional del PNUD (NEX). Lo cual implica que el Ministerio de Minas y Energía (MME), a través de su Unidad de Planeación Minero Energética (UPME), como Agencia Ejecutora del proyecto será responsable de la implementación día-a-día del proyecto y de los avances para alcanzar los objetivos específicos del mismo. Esta modalidad ayuda a una mayor apropiación nacional y a crear condiciones para la sostenibilidad de las iniciativas. El PNUD es responsable ante el Consejo del GEF como agencia implementadora a cargo de la administración financiera y de obtener los resultados del proyecto.

Nivel de proyecto

El Proyecto establecerá una Unidad de Gestión del Proyecto (UGP) consistente en un Coordinador y un Administrador. La UGP estará ubicada en la UPME. El Coordinador del Proyecto será responsable del desarrollo día-a-día del Proyecto en lo referente a operaciones, contabilidad financiera, informes periódicos al PNUD y el correcto desembolso de los recursos de acuerdo a los planes y presupuestos cuatrimestrales elaborados en coordinación con el PNUD. El Coordinador del Proyecto es la principal persona de contacto para las comunicaciones externas del Proyecto y será el facilitador de las reuniones entre la UPME y el PNUD. Mientras la UGP estará dedicada a la planeación, supervisión y administración, el Grupo de Trabajo del Proyecto (GTP) trabajará en profundidad en los temas técnicos que atañen al Proyecto.

El Proyecto contratará un Coordinador a tiempo completo. El presupuesto del GEF está disponible para cubrir este costo en el año 1; para los años 2 y 3 el Gobierno de Colombia asumirá este costo (contribución en especie). Se contratará un Administrador del proyecto a tiempo completo durante los 3 años de ejecución y con cargo al presupuesto del GEF.

Nivel de actividades

La UPME establecerá un Grupo de Trabajo del Proyecto (GTP) interno y asignará dos profesionales con experiencia en Eficiencia Energética a este grupo al que estarán dedicados a tiempo completo. El Proyecto complementará este grupo con dos expertos adicionales, financiados con el presupuesto del GEF, para contra con los recursos humanos necesarios para la exitosa implementación de las actividades. La estrategia de salida del Proyecto consiste en incorporar este Grupo de Trabajo a la Agencia Nacional de Eficiencia Energética, una vez que ésta sea creada. El Grupo de Trabajo estará liderado por un Líder Técnico del Proyecto, papel que puede ser asignado al personal de la UPME o a alguno de los consultores contratados por el Proyecto. Es importante que la UPME maneje el Grupo de Trabajo a través de la Unidad de Gestión del Proyecto (UGP) para preservar la integridad del mismo. (Ver organigrama en la Parte III del documento presentado al GEF en anexo para ver la división entre los niveles institucional, de proyecto y de actividades)

Nivel institucional

El PNUD y la UPME asignarán un miembro de su personal que será responsable de la implementación del Proyecto. En el caso del PNUD, éste será el Oficial de Programa a cargo; para la UPME será la persona que asume la responsabilidad del proyecto en nombre del Gobierno Nacional (el “Director del Proyecto”).

El Oficial del Programa y el Director del Proyecto se encontrarán el Comité Directivo del Proyecto (CDP) junto con el Coordinador del Proyecto, el Administrador y el Líder Técnico del Proyecto. El CDP se reunirá trimestralmente para revisar el progreso y los obstáculos y decidir sobre temas estratégicos y/o críticos. El CDP es la autoridad máxima de decisión en relación al proyecto. Las reuniones de este Comité serán organizadas por el Coordinador del Proyecto y se convocarán reuniones extraordinarias en caso de que alguno de sus miembros lo considere necesario. adicionales Pueden asistir también representantes del equipo PNUD/GEF de la Oficina Regional o la sede y, si se considera apropiado, puede invitarse a consultores externos que apoyen el proceso de seguimiento.

Para interactuar con otros actores a nivel institucional, está previsto que la UPME con su Líder Técnico del Proyecto, apoyará la presentación del Proyecto y sus avances en Comité Interministerial CIURE. La CIURE reúne a los actores más importantes relacionados con la Eficiencia Energética en Colombia. Se espera que la presencia del Proyecto a este nivel generará una importante retroalimentación y mejorará la disseminación efectiva de los resultados del proyecto entre los distintos actores. El Líder Técnico del Proyecto elaborará archivos sobre las reuniones con la CIURE que entregará a la Unidad de Gestión del Proyecto.

Reconocimiento del PNUD y el GEF

Para reconocer los aportes del PNUD y del GEF al Proyecto, sus logos deben aparecer en todas las publicaciones relevantes del Proyecto. Cualquier cita de las publicaciones relacionadas con proyectos financiados por el GEF deben también reconocer el papel del GEF.

PART IV: Plan de Seguimiento y Evaluación

El seguimiento y evaluación del Proyecto será llevado a cabo de acuerdo a los procedimientos del PNUD y el GEF y liderado por el equipo del proyecto y la Oficina del PNUD Colombia con apoyo del equipo PNUD/GEF. La Matriz de Resultados Estratégicos (ver sección II del documento presentado al GEF en anexo) provee de indicadores de proceso e impacto con sus correspondientes medios de verificación. La matriz será la referencia para el seguimiento a la implementación del proyecto y para las evaluaciones independientes de progreso e impacto. La Unidad de Gestión del Proyecto preparará un Plan detallado de monitoreo y evaluación que se presentará en el Taller de Inicio. Este taller provee la plataforma para revisar y ajustar los indicadores y medios de verificación, en una manera consistente con los resultados esperados del proyecto.

Seguimiento y reportes

El seguimiento del proyecto consiste en un número de actividades diarias y periódicas que incluyen: (i) seguimiento diario de la Unidad de Gestión del Proyecto (Coordinador del Proyecto); (ii) seguimiento periódico de la Oficina del PNUD Colombia (Oficial de Programa) trimestralmente y con más frecuencia si es necesario; y (iii) seguimiento anual a través de las Revisiones Tripartitas (MME, PNUD Colombia, Equipo PNUD/GEF). La Oficina del PNUD Colombia y la Unidad de Coordinación Regional del PNUD/GEF llevarán a cabo visitas al proyecto y misiones de campo anualmente o con mayor regularidad si así se acuerda en el Plan Anual de Trabajo.

Los informes de seguimiento del Proyecto consisten en la elaboración periódica de un informe estándar por parte de la Unidad de Gestión del Proyecto que se remitirá al PNUD: (i) el informe de inicio del proyecto, preparado después del Taller de Inicio; (ii) un Informe Anual de Progreso /Revisión de la Implementación del Proyecto (PIR), que es utilizada por la Oficina del PNUD

Colombia y la Unidad de Coordinación Regional PNUD/GEF para revisar el progreso del proyecto y como insumo para reportar a un nivel más agregado, (iii) informes trimestrales de progreso, con especial énfasis en los principales adelantos en el progreso del proyecto; (iv) informe final del proyecto, preparado tres meses antes de la finalización del proyecto.

Para una descripción de los mecanismos de seguimiento y evaluación del PNUD y el GEF consúltese la sección correspondiente en el anexo a este documento y los manuales corporativos.

Adicionalmente al plan de seguimiento y evaluación, los proyectos piloto de reemplazo de chillers serán evaluados antes y después del reemplazo. Un sistema de monitoreo que incluya instrumentos de medición in situ será incorporado e implementado para analizar el desarrollo de los equipos y el ahorro de energía así como las correspondientes reducciones en las emisiones de CO₂.

Evaluaciones

La Evaluación de Medio Término determinará el progreso realizado hacia los resultados e identificará medidas correctivas si fuese necesario. Se enfocará en la efectividad, eficiencia y puntualidad de la implementación; resaltando temas que necesiten de acciones o decisiones; y presentará un avance de lecciones aprendidas sobre el diseño, la implementación y la gestión del proyecto. Los resultados de esta evaluación se incorporarán como recomendaciones para mejorar la implementación en la segunda parte del proyecto. La Evaluación de Medio Término tendrá lugar aproximadamente cuando la ejecución del presupuesto llegue al 50% (a los 18 meses), a menos que se acuerde otra cosa con el PNUD. Los términos de referencia serán preparados por la Oficina de PNUD Colombia basados en la guía de la Unidad de Coordinación Regional del PNUD/GEF.

Se llevará a cabo una Evaluación Final independiente tres meses antes de la terminación del proyecto. La Evaluación Final se enfocará en aspectos similares a los de la Evaluación de Medio Término profundizando en el impacto y sostenibilidad de los resultados, incluyendo la contribución del proyecto al desarrollo de capacidades y el logro de los objetivos ambientales globales. Esta Evaluación hará recomendaciones también para siguientes pasos y actividades. Los términos de referencia serán preparados por la Oficina de PNUD Colombia basados en la guía de la Unidad de Coordinación Regional del PNUD/GEF.

Presupuesto de seguimiento y evaluación

El presupuesto total para Seguimiento y Evaluación es de USD 195.000 (USD 60.000 del GEF, USD 15.000 de cofinanciación del Gobierno de Colombia y USD 120.000 de cofinanciación en especie de la Oficina del PNUD en Colombia. A continuación podrá verse una tabla con la distribución de este presupuesto en las actividades.

Plan de seguimiento y evaluación indicativo y presupuesto

Tipo de actividad	Responsables	Presupuesto US\$ Excluyendo el tiempo del personal	Cornograma
Taller de inicio	Coordinador del Proyecto PNUD Colombia PNUD / GEF	35.000	En los dos primeros meses del inicio del proyecto
Informe de inicio	Equipo del proyecto PNUD Colombia	N/A	Enseguida del taller de inicio
Medida de los medios de verificación de los indicadores del proyecto	El coordinador del proyecto supervisará la contratación de estudios específicos e instituciones, y delegará responsabilidades en los miembros del equipo relevantes para este tema	Finalizado en la Fase de Inicio y el Taller. Sin costo	Inicio, mitad y final del proyecto
Medida de los medios de verificación del progreso del proyecto (medido anualmente)	Supervisión del Asesor Técnico del GEF y del Coordinador del Proyecto. Medidas por los oficiales regionales y los técnicos locales	A definir como parte de la preparación del Plan Anual de Trabajo. Indicativamente, 5.000	Anualmente, antes del Informe Anual de Resultados (PIR) y de los planes de trabajo anuales
APR y PIR (informes anuales de progreso)	Equipo del proyecto Oficina del PNUD Colombia Unidad de Coordinación Regional PNUD-GEF	N/A	Anual
Informe TPR	Contrapartes de Gobierno Oficina del PNUD Colombia Equipo del proyecto Unidad de Coordinación Regional PNUD-GEF	N/A	Anual, tras la recepción del APR
Comités directivos	Coordinador del Proyecto Oficina del PNUD Colombia	N/A	Enseguida del taller de inicio y por lo menos una vez al año
Informes periódicos de estado	Equipo del proyecto	N/A	A definir por el Equipo del Proyecto y la Oficina del PNUD
Informes técnicos	Equipo del proyecto Consultores si es necesario	N/A	A definir por el Equipo del Proyecto y la Oficina del PNUD
Evaluación de medio término	Equipo del proyecto Oficina del PNUD Colombia Unidad de Coordinación Regional PNUD-GEF Consultores externos (equipo de evaluación)	22.500	En la mitad de la implementación
Evaluación Final Externa	Equipo del proyecto Oficina del PNUD Colombia Unidad de Coordinación Regional PNUD-GEF Consultores externos (equipo de evaluación)	32.500	Al final de la implementación del Proyecto
Informe de finalización	Equipo del proyecto Oficina del PNUD Colombia Consultores externos	N/A	Al menos un mes antes del final del proyecto
Lecciones aprendidas	Equipo del proyecto Unidad de Coordinación Regional PNUD-GEF (sugiere formatos, etc)	15.000	Anual
Auditoría	Contratación externa con apoyo de Oficina del PNUD Colombia y Equipo del proyecto	10.500	Anual
Visitas de campo (los costos del personal de PNUD serán cargados a las tasas IA)	Oficina del PNUD Colombia Unidad de Coordinación Regional PNUD-GEF Representantes del Gobierno	19.500	Anual
Misiones de expertos/verificación	Equipo del proyecto Oficina del PNUD Colombia Consultores externos (equipo de evaluación)	10.000	Al final de la implementación del Proyecto
Apoyo a reuniones e informes	Oficina del PNUD Colombia Equipo del proyecto	50.000	A lo largo de todo el proyecto
COSTO TOTAL INDICATIVO		US\$ 195.000	

PART V: Contexto Legal

Este Documento de Proyecto (en adelante PRODOC) tiene como fundamento o soporte legal el Convenio o Acuerdo Básico de Cooperación celebrado entre el Gobierno de Colombia y el Programa de las Naciones Unidas para el Desarrollo PNUD el 29 de mayo de 1974. Tal Convenio, como instrumento de derecho internacional público, es de obligatorio acatamiento para las partes suscriptoras. Por esta razón el PRODOC es el instrumento al que se hace referencia en el artículo I del mencionado Convenio de Cooperación.

Por consiguiente el desarrollo o ejecución de las previsiones de este PRODOC quedan sometidos con exclusividad a las normas prescritas por el PNUD, vigentes o futuras, tanto en lo relacionado con el manejo de los recursos que se incorporen al Proyecto como en lo que tiene que ver con las actividades relativas a la selección de proveedores de bienes y servicios, de asesores y de consultores, para la obtención de los objetivos del Proyecto que ha inspirado la celebración del presente arreglo de cooperación. Desde luego y como consecuencia de lo anterior, la celebración de toda clase de contratos, órdenes de servicio, de trabajo, de compra y actos semejantes o conexos y complementarios por parte del PNUD en desarrollo del Documento de Proyecto, también se someterán a las disposiciones propias del PNUD.

Toda controversia que surja entre el PNUD y el Organismo de Ejecución acerca de la interpretación y ejecución del Documento de Proyecto, se procurará resolver directamente por acuerdo amigable entre las partes. Si ello no fuere posible las partes se acogerán a los procedimientos arbitrales previstos en la reglamentación de la Comisión de las Naciones Unidas para el Derecho Mercantil Internacional (CNUDMI)

Las partes son conscientes de que en virtud de lo previsto en la Convención sobre la materia, aprobada por la Ley 62 de 1973, el PNUD goza de privilegios e inmunidades cuyo ejercicio y cuya vigencia en nada se alteran o modifican por la suscripción de este PRODOC.

Las revisiones del documento de proyecto que se indican a continuación, pueden ser efectuadas con la firma del Representante Residente del PNUD, siempre que los otros signatarios no presenten objeciones a estas revisiones:

Revisiones de cualquiera de los anexos del documento del proyecto o adiciones a ellos

El Representante Residente del PNUD en Colombia está autorizado a efectuar por escrito los siguientes tipos de revisión del presente Documento de Proyecto, siempre de acuerdo con la Unidad PNUD/GEF y asegurando que no existe objeciones por parte de las otras partes firmantes de este Documento de Proyecto:

- Revisión o adición de anexos al Documento de Proyecto;
- Revisiones que no impliquen cambios significativos en los objetivos inmediatos, los resultados o las actividades del proyecto, pero que se deriven de una redistribución de los insumos ya acordados o a aumentos de los gastos debido a la inflación;
- Revisiones anuales obligatorias, mediante las cuales se reestructure la entrega de los insumos acordados del proyecto, se aumenten los gastos de los expertos o de otro tipo debido a la inflación, o se tenga en cuenta el margen de flexibilidad del organismo en materia de gastos.

Por otra parte, en caso de haber ajustes en los objetivos o en las actividades propuestas en el documento de proyecto se podrán hacer revisiones sustantivas, las cuales debe firmar tanto el PNUD como el organismo ejecutor.

PARTE V: OBLIGACIONES ANTERIORES Y REQUISITOS PREVIOS

Financieras

El inicio del proyecto se dará cuando se disponga de los aportes estipulados para su financiamiento. Este proyecto está financiado por el GEF. Los recursos financieros de este proyecto serán administrados de acuerdo con el reglamento financiero del PNUD.

Variaciones Cambiarias

Eventuales variaciones cambiarias resultantes de las diferencias en las tasas de cambio serán aumentadas o disminuidas del valor correspondiente en dólares americanos (US\$) a cada depósito, conforme a lo dispuesto en el Capítulo 5, reglamento 5.04 del Manual Financiero del PNUD. Dicho ajuste se realizará a través de revisión presupuestal.

Previsiones o variaciones cambiarias

Trimestralmente el PNUD, conjuntamente con la dirección del proyecto, realizarán un análisis de cobertura de los recursos presupuestales y de caja del proyecto ((generados por eventuales variaciones cambiarias) con el fin de ajustar los planes de trabajo.

Para que el PNUD pueda registrar contablemente el ingreso de las contribuciones de costos compartidos en el mes en que estas fueron depositadas en la cuenta del PNUD, la institución contribuyente deberá enviar de inmediato a la oficina del PNUD, una comunicación formal informando que el depósito ha sido realizado, acompañando a la comunicación, la ficha de depósito bancario.

Devolución de réditos

Los réditos de proyectos regionales serán reinvertidos en el proyecto, únicamente en las actividades de valor agregado especificadas en el numeral 4.2 del Capítulo II – “Estrategias” del presente documento de proyecto.

Transferencia de Equipos

La transferencia de equipos adquiridos a través de la presente iniciativa está condicionada al compromiso formal por parte del organismo de ejecución, que dichos equipos sean para el servicio del proyecto y sus propósitos, hasta la finalización de las actividades del proyecto. El director del proyecto será responsable de la localización y uso de estos bienes adquiridos a través del proyecto.

Publicaciones

No se permitirá la inclusión de promoción de índole política, partidaria, religiosa o de carácter comercial, ni símbolos, logotipos, logo marcas en documentos, publicaciones y actividades realizadas en la implementación del presente proyecto, y la inclusión del Logo y Nombre del PNUD en los medios de divulgación, será objeto de consulta al PNUD y los organismos participantes en la ejecución del proyecto.

Terminación del proyecto

El presente proyecto terminará: 1) Por vencimiento del término previsto para su duración sin que exista la prórroga; 2) Por mutuo acuerdo de las partes; 3) Por cumplimiento de su objeto; 4) Por fuerza mayor o caso fortuito.

SECCIÓN II: MATRIZ ESTRATÉGICA DE RESULTADOS

Project Strategy		Objectively verifiable indicators				Risks and Assumptions
		Indicator (quantified and time-bound)	Baseline	Target	Sources of verification	
Goal	To reduce greenhouse gas emissions from the building sector in Colombia through the implementation of a comprehensive package of activities to improve the energy efficiency of commercial, public and residential buildings. An associated goal is to reduce emissions of ozone-depleting substances from CFC-based centrifugal chillers.	(1) Directly avoided CO2 emissions (tons CO2). (2) Indirectly avoided CO2 emissions (tons CO2).	(1) No direct CO2 emission savings. (2) No indirect CO2 emission savings.	(1) Direct CO2 emission savings: 62,000 tons CO2. (2) Indirect savings due to replication: 124,400 tons CO2; 150,000 tons CO2.	Not verified during project lifetime	Medium and long-term commitment of the Government to maintain a conducive policy environment beyond the time horizon of the intervention
Objective of the project	To promote energy efficiency in buildings by removing the institutional, legal and regulatory, capacity and technical barriers that presently limit its widespread adoption.	(1) Market transformation (scale 1.-4). (2) Policy adoption (scale 1.-4). (3) Saved volume of energy (MWh). (4) Investments (US\$). (5) Number of lending institutions.	(1) Market transformation: 1. (2) Policy adoption: 1. (3) Saved energy: 0 MWh. (4) Investments US\$ 0. (5). No. lending institutions: 1 (Bancoldex-URE)	(1) Market transformation: 3. (2) Policy adoption: 4. (3) Saved energy: 88,600 MWh. (4) Investments (direct) US\$ 3.2 M. (5). No. lending institutions: 1 (Bancoldex-URE)	(1 and 2) judgments made by Project Coordinator and independent evaluators. (3) Use yearly savings as a proxy. (4). Project reports, audits. (5) This GEF objective is not directly pursued by the project (no verification needed)	The Government perceives EE in buildings as a priority and defines and implements an enabling policy and legal framework, including specific instruments. Building professionals and (potential) energy service companies are motivated to serve the market
Outcome 1	Government institutions responsible for promoting energy efficiency have been strengthened	Number of persons added to UPME by the Project; total time dedicated to UPME to EE policy and programme development, and NEEA preparation				
1.1	An ad hoc project group on EE is established within UPME	Number of persons added to UPME to prepare and execute energy efficiency (EE) programs and to prepare a national EE agency (NEEA) will be limited	Capacity within UPME will be expanded by 6.0 person-years, such that EE and NEEA development can be properly addressed. The exit strategy envisages integration of this working group into the NEEA.	Periodic reports by UPME; audits	Effective support will be given to the Project and UPME by the Government.	
1.2	A national EE agency (NEEA) with mandate to implement and promote EE programs and policies has been designed and a law proposal for its enactment, presented	Approved law proposal for NEEA; Approved business plan and budget for NEEA; formal creation and operation of the NEEA	No legislation to create a NEEA will be in place; no business plan will be available; no NEEA will be created	A law proposal (1) will be drafted enabling the formal creation of the NEEA by the State. An appropriate business plan (1) will be in place. Ultimately, the Project envisages the NEEA to become formally operational at the end of the project.	Official State publications; report containing business plan; first activities of NEEA	Effective support will be given to the Project and UPME by the government. The Project and UMPE succeed in mobilizing sufficient political support in order to have a law proposal for the NEEA accepted.
Outcome 2	Policies, regulations and standards to promote energy efficiency in buildings have been developed and implemented					

Project Strategy		Objectively verifiable indicators				
		Indicator (quantified and time-bound)	Baseline	Target	Sources of verification	
2.1	The PROURE program has been strengthened by developing and implementing specific regulation to promote EE in buildings, concerning: (i) provision of energy services for public and non-public buildings; (ii) energy audits; (iii) certification of energy professionals; (iv) energy service companies (ESCOs)	List of regulations and documents describing EE activities and programs under PROURE.	Lack of specific regulations and programs to promote EE in buildings	Specific regulation on the issues (i... iv) has been developed and implemented.	Annual reports by UPME; formal State publications	Government support is a detailed working agenda under PROURE.
	National standards for EE in buildings have been developed, including energy audits and energy management.	Number of national standards for EE in buildings completed; national EE standards enacted; number of energy audits executed per year; number of feasibility studies for large HVAC conducted per year	No national standards for EE in buildings will be in place; energy audits, energy management plans and feasibility studies for large EE investments, will hardly develop	Three (3) standards developed, e.g. thermal quality of buildings, Protocol for energy audits in buildings developed. Guidelines for energy management plans developed.	Reports and Official State publications; reports of energy audits and feasibility studies conducted	Government support is required to define and support a detailed working agenda under PROURE, in particular to develop EE standards.
	Incentives for EE investments have been analyzed by UPME as input for policy development	Policy support document giving recommendations regarding appropriate incentives, including an analysis of economic and sustainability aspects	During the project time horizon, little or no work will be done to prepare a financial incentive aimed at investments in EE in buildings	Policy support document analyzing financial incentives for EE in buildings, has been delivered	Policy support report	Desk study: no risks or specific assumptions.
Outcome 3	Technical knowledge and capacity among key stakeholders have been enhanced					
3.1	Awareness and knowledge about EE among building engineers, architects, compliance officers, EE product suppliers and customers, have increased	Production of training and informational material; preparation and execution of training courses; number of professionals trained	Inadequate knowledge and technical skills existent among key professionals, suppliers and potential customers	Training and informational material produced and distributed among key professionals, suppliers and customers; courses on EE prepared and carried out for key professionals and suppliers; at least 75 professionals trained	Training and information material; reports of courses given; list of professionals trained	It is assumed that building professionals show a genuine interest in training, in response to market signals.
	A technical assistance program for the replacement of inefficient, CFC-using chillers, has been implemented	Design of a technical assistance (TA) program to replace inefficient and CFC-using chillers; implementation of the TA program; delivery of feasibility studies for replacement of HVAC installations	Inefficient and CFC using chillers are substituted after having reached their technical lifetime	TA program has been designed and implemented; the exit strategy envisages continuation of the TA program by NEEA support and private sector involvement. The delivery of at least 10 feasibility studies for HVAC replacement projects.	Progress reports; project and feasibility studies carried out under the TA component	It is assumed that the technical and financial profile for the envisaged chillers projects stimulate market partners (suppliers, building owners, financiers) to cooperate in a comprehensive TA program and subsequent investment
3.3	Compiled and disseminated project guidelines, analytical tools and product documentation	Production of technical guidelines for large chiller projects; availability of guidelines (documents, AV material) among stakeholders	No guidelines will be available among key stakeholders in Colombia	Information material available among at least 3 major suppliers and in 10 major cities in Colombia	Existence of documents; visits to suppliers	No specific risks or assumptions
Outcome 4	Energy savings realized from the replacement of inefficient chillers					

Project Strategy		Objectively verifiable indicators				Risks and Assumptions
	Indicator (quantified and time-bound)	Baseline	Target	Sources of verification		
4.1	A selection mechanism has been prepared to call for project proposals for chiller replacement, including the development of a project portfolio for replication	(1) No formal selection mechanism; (2) No chiller projects accepted; (3) Shortlist of 58 projects identified; (4) no capital available for replication	(1) Call for projects issued under a replicable mechanism; (2) At least 13 chiller projects accepted for execution; (3) At least 25 projects under development for replication; (4) indicative 4 M US\$ leveraged for replication	Official State publications; site visits and project (monitoring) reports; reports from credit suppliers	Government support is continued and financing sectors encouraged to invest in EE/CFC-free technology; identified projects are technically and financially viable	
4.2	Confirmed investment for 13 chiller projects with committed co-financing (lending) resources and support from the MLF	No chillers replaced	At least 13 chillers replaced; minimum capacity target 3,000 TR	Project implementation reports; site visits; audits	It is assumed that at least 13 chiller replacement projects are financially sound and bankable; and that they can be finalized within the time horizon of the intervention.	
4.3	Selected projects have been monitored before and after chiller replacement to verify the actually achieved GHG benefits.	Direct emissions avoided by selected chiller projects	(1) Measurements of energy use by obsolete chillers; (2) GHG emissions according to existing technology.	Measurements and audits; final report	No specific risks or assumptions	
Outcome 5						
A monitoring and evaluation plan has been implemented						
5.1	Monitoring and evaluation plan has been implemented	Requirements described in the Monitoring and Evaluation Plan, including: periodic reviews by UNDP and GEF; delivery of reports by the Project to UNDP/CO, execution of mid-term and final evaluation	A monitoring plan has been included in the ProDoc	The monitoring plan is deployed progressively during the lifetime of the project. At project end, the monitoring plan has been fully executed.	Project monitoring reports; project visits; independent evaluations (including mid-term and final evaluation)	It is assumed that UNDP/GEF M&E principles are correctly understood by the Project partners.
5.2	Lessons learned collected, prepared and disseminated	Compilation of lessons learned by UPME and independent evaluators; summary of lessons learned produced and made available to UNDP/GEF, the Government of Colombia and other relevant actors in Colombia	Little insight in best practices concerning large-scale EE in buildings in Colombia is available. No lessons learned have been collected and distributed	Substantial insight in best practices to promote EE in buildings in Colombia, exist. Lessons learned have been collected and distributed	Internal project reports and external evaluations	It is assumed that UNDP/GEF M&E principles are correctly understood by the Project partners.

SECCIÓN III: PRESUPUESTO TOTAL Y PLAN DE TRABAJO

Objetivo /Actividad de Atlas	Responsable	Fuente de recursos	Código de presupuesto	Descripción del presupuesto (ATLAS)	Monto Año 1	Monto Año 2	Monto Año 3	Total (USD)			
Objetivo 1: Instituciones de gobierno responsables de promover la eficiencia energética en edificios fortalezadas	UPME	62000 GEF	71200	International Consultants	10,500	12,500	0	23,000			
			71300	Local Consultants	52,500	75,000	75,000	202,500			
			71600	Travel	3,000	6,500	3,000	12,500			
			72100	Contractual Services-Companies	0	25,000	0	25,000			
			72200	Equipment and Furniture	10,000	0	0	10,000			
			74500	Miscellaneous Expenses	0	2,500	2,500	5,000			
				sub-total	76,000	121,500	80,500	278,000			
			Objetivo 2: Políticas, regulaciones y estándares para promover la eficiencia energética en edificios desarrollados e implementados	UPME	62000 GEF	71200	International Consultants	17,500	30,000	15,000	62,500
						71300	Local Consultants	17,500	30,000	25,000	72,500
						71600	Travel	2,500	8,500	4,000	15,000
72100	Contractual Services-Companies	25,000				35,000	25,000	85,000			
74200	AV and Print Production costs	0				2,500	2,500	5,000			
74500	Miscellaneous Expenses	5,000				2,500	2,500	10,000			
	sub-total	67,500				108,500	74,000	250,000			
Objetivo 3: Conocimiento técnico y capacidades de los actores clave mejoradas	UPME	62000 GEF				71200	International Consultants	5,000	15,000	17,500	37,500
						71300	Local Consultants	0	22,500	25,000	47,500
						71600	Travel	7,500	20,000	15,000	42,500
			72100	Contractual Services-Companies	0	45,000	35,000	80,000			
			72200	Equipment and furniture	0	5,000	0	5,000			
			74200	AV and Print Production costs	4,500	6,000	6,000	16,500			

Objetivo // Actividad de Atlas	Responsable	Fuente de recursos	Código de presupuesto	Descripción del presupuesto (ATLAS)	Monto Año 1	Monto Año 2	Monto Año 3	Total (USD)
			74500	Miscellaneous Expenses	0	2,500	3,500	6,000
				sub-total	17,000	116,000	102,000	235,000
Objetivo 4: Ahorro de energía obtenido del reemplazo de los chillers ineficientes	UPME	62000 GEF	71200	International Consultants	0	0	0	0
			71300	Local Consultants	11,500	17,500	25,000	54,000
			71600	Travel	0	0	1,000	1,000
				Contractual Services-Companies	0	0	0	0
			71400	Miscellaneous Expenses	0	0	0	0
			74500	Sub-total	11,500	17,500	26,000	55,000
Objetivo 5: Un plan de seguimiento y evaluación implementado	UPME	62000 GEF	71200	International Consultants	0	12,500	20,000	32,500
			71300	Local Consultants	4,000	5,000	6,500	15,500
			71600	Travel	1,000	3,500	5,500	10,000
			74500	Miscellaneous Expenses	0	1,000	1,000	2,000
				Sub-total	5,000	22,000	33,000	60,000
				TOTAL	54,000	17,500	17,500	89,000
Unidad de Gestión del Proyecto	UPME	62000 GEF	71600	Travel	0	2,500	1,500	4,000
			72200	Equipment and furniture	3,000	0	0	3,000
			74500	Miscellaneous Expenses	0	500	500	1,000
				Sub-total	57,000	20,500	19,500	97,000
				TOTAL	234,000	406,000	335,000	975,000

ANEXO – documento presentado al GEF



UNDP Project Document

August 2009

UNDP-GEF Medium-Size Project (MSP)

Government of Colombia

United Nations Development Programme

UNDP CO Colombia, MME-UPME, MLF

PIMS 3829 “CO-EFFICIENCY: Improving Energy Efficiency in Buildings”

Brief Description

The medium-sized project aims at promoting energy efficiency in buildings and reinforcing the development of a market approach in the existing stock of buildings. Achieving the project objective will ensure that energy is used more effectively and rationally in Colombia. The project will promote the transformation of energy efficiency markets in buildings in Colombia by removing the institutional, policy and technical capacity barriers that presently limit its widespread adoption. The project will further promote the replacement of 13 large inefficient, CFC-using chillers under a government programme (MVADT/UTO) with financial support from the Multilateral Fund for the Protocol of Montreal (MLF) on ozone-depleting substances.

The CO-Efficiency project will result in the direct reduction of approximately 62,000 tons of CO₂ equivalent and indirect emission reductions estimated at 274,000 tons of CO₂e over a period of 20 years.

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Acronyms

A/C	Air conditioning
ACAIRE	Colombian Association of Air-conditioning and Refrigeration
APR	Annual Project Report
BANCOLDEX	Credit Line of Banco de Comercio Exterior de Colombia S.A.
CFC	Chlorofluorocarbons
CIURE	Intersectoral Commission for Rational and Efficient Use of Energy and Non-conventional Energy Sources
CO ₂	Carbon dioxide
CONOCE	Programa de Normalización, Acreditación, Certificación y Etiquetado de Equipos de Uso Final de Energía
ESCO	Energy Service Company
GEF	Global Environment Facility
GHG	Greenhouse gases
GWh	Gigawatt hour
HVAC	Heating, Ventilation and Air Conditioning
ICONTEC	Colombian Standardization Institute
IW	Inception Workshop
kWh	Kilowatt hour
M&E	Monitoring and Evaluation
MME	Ministry of Mines and Energy
MLF	Multilateral Fund for the Implementation of the Montreal Protocol
MVADT	Ministry of Environment, Housing and Territorial Development
MWh	Megawatt hour
NGO	Non Governmental Organization
PIR	Project Implementation Review
PMU	Project Management Unit
PROURE	Programa de Uso Racional y Eficiente de la Energía y demás formas de Energías No Convencionales
PSC	Project Steering Committee
RF	Replication factor
TPR	Tripartite Review
UNDP	United Nations Development Programme
UNDP-CO	UNDP Country Office
UPME	Mining and Energy Planning Unit (MME)
UTO	Ozone Technical Unit (MVADT)

SECTION I: Elaboration of the Narrative

PART I: Situation Analysis

2. Energy consumption in Colombia increased 33% between 1990 and 2005 and its primary energy production grew at about 3.5% annually during the same period¹³. The country shows a clear tendency to the use of coal for energy production moving from 28.7% to 46.9% of the total primary energy production between 1990 and 2005. Electricity consumption has increased over the years reaching 4.07% in 2006.
3. In terms of the business-as-usual scenario, it is estimated that the energy consumption in the residential sector will grow at 5.1 % and 6.5 % for the commercial sector between 2005 and 2025 were 83% of the energy will be represented by electricity.
4. In 2001, Colombia established Energy Efficiency (EE) as a national priority through the “*Law for the Promotion of Energy Efficiency and Renewable Energy*”¹⁴. Among other things, this Law provides the framework to design and implement the “*National Program for the Rational and Efficient Use of Energy and for Renewable Energies (PROURE)*”¹⁵. The Law requires the State to: (i) establish conducive legal, technical, economic and financial conditions, including financial incentives (ii) promote EE and RE projects, (iii) foster research on EE; and (iv) develop strategies to create awareness on EE among citizens.
5. In spite of the large potential for EE in the Colombian industry and public and private buildings, the Law has as yet not led to the creation of a market for more efficient designs, building equipment and energy services. In December 2003, the Government issued the Decree 3683/2004 that established the “*Intersectoral Commission for Rational and Efficient Use of Energy and Non-conventional Energy Sources (CIURE)*” as an advisory body with the Mining and Energy Planning Unit (UPME) acting as its Technical Secretary¹⁶. The Decree defines the overall rules and scope for the PROURE programme, but is less explicit with regard to implementing strategies and operational mechanisms.
6. The efficient end-use of energy is a key factor to improve the cost-effectiveness of the national economy and to control energy costs for the commercial, public and residential sector. Colombia is committed to the conservation of the local and global environment by controlling the emissions of GHG and the reduction of discharges into the local environment. In spite of the large share of hydropower in the electricity generating mix¹⁷, thermal power is important to meet growing peak demand and as a backup in years with below-average rainfall. While coal reserves are very large, oil production is declining. With rapidly increasing energy demand¹⁸, energy conservation and the use renewable energy sources (mainly biomass – ethanol – and wind power) are strategic to diversify the country's energy mix.

¹³ Ministerio de Minas y Energía, Plan Energético Nacional 2006-2025, Colombia 2007

¹⁴ Law 697/2001, 3 October 2001.

¹⁵ Programa de Uso Racional y Eficiente de la Energía y demás formas de Energías No-convencionales (PROURE).

¹⁶ The Unidad de Planeación Minero-Energética (UPME) of Colombia's Ministry of Mines and Energy (MME); The UPME has been in charge of the EE and RE activities of the Government, in particular strategic planning, sector studies and the promotion of programmes, since 1995.

¹⁷ Colombia is the largest coal producer and exporter of Latin America (recoverable reserves were 7,300 Mmst in 2005). Proven oil reserves were 1.45 million barrels, natural gas reserves 4.0 Tcf (2007); in hydropower, Colombia is second only to Brazil in Latin America. 78% (42,523 GWh) of the total electricity production of the country (54,855 GWh) is produced from hydro-resources compared to 17.8% (9,753 GWh) by thermal power plants (the remainder is private production for self-consumption). In terms of generating capacity 66% (8,532 MW) is hydroelectric and 34% (4,353) is thermal (natural gas or coal-fired).

¹⁸ The National Energy Plan 2006-2025 estimates an increase in energy use of 49% over this period, with associated additional CO2 emissions of 27 million tons.

7. The lack of a strong national entity with a mandate to execute EE programmes has been identified as the main barrier for a market transformation towards EE technologies in Colombia. Further, in the absence of a demand for EE solutions, professionals such as architects and installation engineers lack specific know-how and understanding of the opportunities, costs and benefits of EE technologies and energy management in buildings. During the Project Preparation Phase (PPG), the preliminary barrier analysis presented in the PIF, has been reviewed and prioritized. Based on this analysis, the project will primarily focus on the institutional, policy and the technical capacity barriers.
8. In this context, the barriers have been prioritized as follows:

Institutional and policy barrier

9. As indicated in the Plan Energético Nacional (NEP) 2006-2025, the institutional structures within the Government are complex and inadequate to effectively implement EE policy. This is a major barrier, which explains why the advances in legislation do not translate into tangible results in the field. The UPME is rather an administrative unit attached to the MME with no explicit mandate to implement EE policies and programmes. Without a well-positioned public (or public-private) agency with delegated faculties to prepare and execute EE programmes, market actors will not respond. The importance and successful operation of a National Energy Efficiency Agency (NEEA) has been demonstrated in other countries in the region, for example in Mexico.
10. In the current situation, policy development occurs at the highest level. More specific regulation is needed to create a conducive environment, by creating awareness, promoting demand and fostering economic viability of investments in EE measures and equipment. Without a clear and stable regulatory framework, the financial risks related to investments in EE remain high and market actors will stick to conventional solutions.

Technical capacity barrier

11. In the absence of a demand for EE solutions, professionals such as architects and installation engineers lack the technical know-how and understanding of the opportunities, costs and benefits of EE technologies and energy management in buildings. Without technical inputs, real estate developers pay little attention to energy efficiency and compliance officers, since EE is not addressed in present building code. Without a demand from the market, EE is not a major criterion used in the sales strategies of equipment suppliers. At present only few universities or technical schools offer some preparation on EE, with a focus on industrial processes¹⁹.
12. Notwithstanding the progress made under the CONOCE programme, the lack of standards and their enforcement constitutes a major technical barrier. Without specific references regarding the quality and performance of equipment, appliances and buildings, no market transformation towards more EE solutions and technologies will take place.

Information and awareness barrier

13. Without an appropriate policy framework and technical standards in place, a demand for EE solutions cannot develop: no clear message can be given to market actors and the general public. By consequence, documentation and promotional material for equipment currently do not include information on EE aspects and environmental impact. With respect to household appliances, end-users depend on the manufacturers or retail agent for information. Energy labels on equipment that is imported from the

¹⁹ The universities of Cali (Autónoma de Occidente), Barranquilla (Universidad del Atlántico) and Bogota (La Salle) offer specialization and diploma programmes in energy efficiency that respond to the requirements of industries in the respective regions.

country of origin rather tend to create confusion among end-users. The first steps towards informing the public have been set under the PROURE programme. With the creation of a national EE agency, information campaigns can be effectively implemented and sustained. The CO-Efficiency project would be specifically targeted at buildings and to support EE measures in industry. A parallel UNDP/GEF project under preparation “*Energy Efficiency Standards and Labels in Colombia*²⁰” will focus on the introduction of EE standards and labels for electric appliances.

Delivery model and financial barriers

14. There are some limited experiences in Colombia with financing of energy performance contracting and direct financing of EE equipment and processes in industry. Although some banks have shown interest, finance institutions lack awareness and knowledge to assess investments in EE. Suppliers of HVAC equipment have manifested interest to work under performance contracting, but stressed that the lack of demand and low energy prices prevent them from developing this market. Clearly, a more proactive approach is needed to increase access to financing capital under sufficiently attractive conditions. This will only be achieved by consistent policy development, ideally under leadership of one national entity.
15. In the building sector the lack of demand of energy efficiency services and technologies is mirrored by a general lack of capacities and corresponding services, such as: professional advice by equipment suppliers and independent consultants, energy auditors and energy service companies (ESCOs). Therefore, rather than one delivery model to provide all kind of EE solutions to end-users, a range of services needs to be developed for each group of beneficiaries, including: (i) suppliers; (ii) financiers; (iii) energy professionals; (iv) consultants; and (v) specialized companies providing energy services (ESCOs).

PART II: Strategy

16. Based on the barrier analysis presented above, the UNDP/GEF MSP “*CO-Efficiency - Improving Energy Efficiency in Buildings*” will primarily target the *institutional, policy and technical capacity* barriers, and be supportive to PROURE to improve awareness and the availability of information among key stakeholders. Concerning policy development, some activity will be deployed to review the modalities for EE service delivery. An important target of the project will be the establishment of a National Energy Efficiency Agency (NEEA) with an appropriate mandate²¹. As an intermediate step, the Project will increase the working capacity on energy efficiency within UMPE; the incorporation of these personnel in the NEEA is foreseen as part of the Project’s exit strategy.
17. The project will also promote the operationalization of existing credit facilities, i.e. Bancoldex-URE, to specifically finance EE projects based on chillers replacement and assist chiller owners access financing. A limiting factor is the lack of specific capacity among bank staff to understand and evaluate highly technical proposals. The Project will address this barrier by providing targeted training on financial and risk aspects of EE investments and by performing awareness-raising activities.
18. Alongside dedicated credit facilities, specific incentives are likely needed to increase the return on investment of EE measures, such as accelerated depreciation, financial lease constructions, and possibly adjustments to the tariff structure. The Project will review the present situation and draft recommendations as input for EE policy development.

²⁰ PIMS 3087

²¹ Entities based on public-private ownership can be established without new legislation. The Project will strive for a full public agency, which requires the approval of a law proposal.

19. A key element in the project strategy is the synergy sought with the multilateral fund (MLF) for the implementation of the Montreal Protocol on ozone depleting substances. The national Ozone Technical Unit (UTO)²² has presented a demonstration project for integrated management of centrifugal, CFC-based chillers²³ to the MLF. Based on a survey of large buildings²⁴, the Ministry has proposed to provide assistance to the replacement of a sample of 13 large, inefficient, CFC-based chillers to demonstrate the feasibility of this kind of investments among a variety of end-user profiles. The CO-Efficiency Project will take advantage of this opportunity to generate tangible results in the existing building sector by preparing and implementing this pilot. The experiences gained by this project will be used to feed into policy development, in particular concerning the relation with private market actors and financing constructions.
20. The CO-Efficiency Project will create an improved institutional, legal and regulatory framework to promote EE in buildings in Colombia. The strategy of the Project is to address the institutional, legal and regulatory, capacity and technical issues in order to realize the following:
 - Strengthening of Government institutions;
 - Development of policies and regulation;
 - Capacity building among market actors;
 - Execution of an investment pilot (replacement of inefficient, CFC-using chillers); and
 - Project monitoring and evaluation.

Project objectives, outcomes and outputs

Project goal and objective

The project has the following goal and objective:

21. The project goal is: “To reduce greenhouse gas emissions from the building sector in Colombia through the implementation of a comprehensive package of activities to improve the energy efficiency of commercial, public and residential buildings. (An associated goal is to reduce emissions of ozone-depleting substances from CFC-based centrifugal chillers).”
22. The project objective is: “To promote energy efficiency in buildings by removing the institutional, legal and regulatory, capacity and technical barriers that presently limit its widespread adoption.”

Environmental benefits

23. The CO-Efficiency Project will generate environmental benefits in the form of avoided CO₂ emissions by the Colombian electricity production sector. The avoided emissions are both direct and indirect: (A) Direct benefits associated with the investment for the replacement of 13 large, CFC-based, inefficient chillers; (B) Indirect benefits: (i) due to replication of chiller pilot; and (ii) associated to the contribution of the Project to a market transformation towards EE technologies in the building sector, specifically due to the impact of the creation of the NEEA. The direct benefits are estimated at 62,000 tons CO₂ over the economic lifetime of the investment (20 years) and taking into account a baseline shift of 33%. The indirect benefits as a result of replication of chiller replacement are 124,000 tons CO₂²⁵. The electric energy saved is 88,600 MWh (direct) and 177,200 MWh (indirect through replication). The

²² Which is part of the Ministry of Environment, Housing and Territorial Development (MVADT)

²³ The UTO/MVADT /UNDP "Demonstration project for integrated management of the centrifugal chiller sub-sector in Colombia, focusing on application of energy-efficient CFC-free technologies for replacement of CFC-based chillers", 3 October 2005

²⁴ Included in Section IV, Part VI

²⁵ A GEF replication factor of 2 is assumed.

indirect benefits as a result of market transformation are (conservatively) estimated of the order of 150,000 tons CO₂; the resulting electricity savings are 685,000 MWh. These environmental benefits of the Project contribute to the objectives of the GEF Climate Change Strategic Priority SP1.

Project Outcomes:

Outcome #1 Government institutions responsible for promoting energy efficiency have been strengthened.

24. ***Output #1.1 An ad-hoc project group on EE is established within UPME.*** A core technical group within UPME is established as a first step towards the establishment of a national EE agency (NEEA). GEF support will consist of the assignment of two, well-qualified, national consultants; the Government of Colombia will assign own staff to this team to create the technical and executing capacity required to address the technical issues of the project, and to prepare the necessary steps for creating the NEEA. It is envisaged that this group will consist of four people working for a period of at least 2.5 years.
25. ***Output #1.2 A national EE agency (NEEA) with mandate to implement and promote EE programs and policies has been designed and a law proposal for its enactment, presented.*** This output includes the preparation of a law proposal to enable the formal creation of the envisaged national EE agency (NEEA), covering the following: (i) the legal mandate of the Agency; (ii) its relation with government entities such as: MME, UPME and CIURE, and (iii) long-term means of financing. The Project will prepare the business plan for the Agency, defining internal structure, staffing and budget requirements. The formal acceptance of the NEEA depends on the Congress and is therefore beyond the scope of this Project. The Project strategy however is targeted at creating strong political support for strengthening the institutional basis to develop and implement EE programmes.

Outcome #2 Policies, regulations and standards to promote energy efficiency in buildings have been developed and implemented.

26. ***Output #2.1 The PROURE program has been strengthened by developing and implementing specific regulation to promote EE in buildings, concerning: (i) provision of energy services for public and non-public buildings; (ii) energy audits; (iii) certification of energy professionals; (iv) energy service companies (ESCOs).*** This output will provide support to the PROURE program by drafting specific regulation to promote energy efficiency in buildings, including: (i) application of EE standards for residential and commercial buildings and large building equipment; (ii) energy audits, (iii) certification of EE professionals; (iv) the provision of energy services (performance contracting, ESCOs). The output will further contribute to other programmes that are conceived as part of PROURE. It is envisaged that CIURE will play an important role for liaison with other Government entities and with the private sector.
27. ***Output #2.2 National standards for EE in buildings have been developed, including energy audits and energy management.*** This output will extend the work on EE standards under PROURE by developing standards for the energy consumption of residential, public and commercial buildings in Colombia. The work will draw on the progress made in this field in the region (Brazil, Chile, and Mexico), the United States and the EU and carried out in collaboration with the Colombian Institute for Technical Standards and Certification (ICONTEC).
28. ***Output #2.3 Incentives for EE investments have been analyzed by UPME as input for policy development.*** This output envisages the execution of a survey (report) of possible modalities for financial incentives targeted at EE investments in the building sector. This work will include a review of the experiences with the existing credit line Bancoldex-URE and draft recommendations for improvement.

Outcome #3 Technical knowledge and capacity among key stakeholders have been enhanced.

29. **Output #3.1:** *Awareness and knowledge about EE among building engineers, architects, compliance officers, EE product suppliers and customers, have increased.* The project will elaborate training materials and implement training courses on EE in buildings for key professionals in this field, as well as product suppliers and large potential customers: (i) architects, installation engineers; (ii) energy providers, compliance officers and auditors; (iii) building owners and financiers. Topics include energy management in buildings, energy auditing, technical and economic analysis of EE projects, commercial models such as energy performance contracts, leasing, shared savings, etc. The training courses will be developed and organized in cooperation with universities, professional associations (ACAIRE) and the industry. At least 75 professionals will be trained.
30. **Output #3.2²⁶** *A technical assistance program for the replacement of inefficient, CFC-using chillers, has been implemented.* A technical assistance programme for the replacement of inefficient, CFC-using chillers in commercial and public buildings will be implemented; all chillers are located in the hot climate zone ("piso térmico 1"). The output will contribute to (i) technical capacity of owners and operators of the chillers, (ii) the development of calculation tools and direct assistance to assess the feasibility of HVAC projects; (iii) linking of HVAC manufacturers to potential customers in the private and public sector, and (iv) issuing technical guidelines for refrigeration professionals. The technical assistance programme will be designed and implemented in cooperation with chiller manufacturers and the Colombian association of air-conditioning and refrigeration (ACAIRE).
31. **Output #3.3:²⁷** *Compiled and disseminated project guidelines, analytical tools and product documentation.* This output is envisaged to be delivered through the development of guidelines and analytical tools to promote the replacement of large, CFC-based chillers, in collaboration with manufacturers and distributors. These guidelines will be made available to stakeholders²⁸.

Outcome #4: Energy savings realized from the replacement of inefficient chillers

32. **Output #4.1:** A selection mechanism has been prepared to call for project proposals for chiller replacement, including the development of a project portfolio for replication. This project output envisages the preparation and implementation of a transparent selection mechanism for chiller replacement proposals. After ranking, awarded projects will receive support, including financial benefits from the Government of Colombia (i.e. the Project), to replace obsolete chillers by modern, efficient equipment. The mechanism will include improved access to loan capital and direct technical support during project preparation. It is anticipated that the mechanism continue to be used by the NEEA after project termination.
33. **Output #4.2:** Confirmed investment for 13 chiller projects with committed co-financing (lending) resources and support from the MLF. This project output refers to the 13 chiller replacement that will be supported through the project. Partial financial support in the form of feasibility studies will be provided by the Multilateral Fund for the implementation of the Montreal Protocol (from co-financing to this project). GEF funds will be used for targeted technical support and promotion (only 2% of the total funding for the component). Private investment will take place through access to loan capital under credit lines from Bancoldex and possibly, direct investment by chiller owners.

²⁶ (was: 2.1)

²⁷ (was: 2.4)

²⁸ This output under the CO-Efficiency initiative is focused on fixed, large installations alone, while the project "Standards & Labels" will address movable (generally smaller) electric appliances for households and the commercial sector.

34. **Output #4.3 Documented operational performance reports on the 13 chiller replacement projects:** This output will be delivered through the monitoring and evaluation work that will be carried out to track the performance of the replacement new chillers (e.g., EER, TR/kW) and evaluate the energy savings that were realized including the associated CO2 emission reductions.

Outcome #5 A monitoring and evaluation plan has been implemented

35. **Output #5.1 Monitoring and evaluation plan has been implemented.** This output covers the implementation of the monitoring and evaluation (M&E) plan as detailed in Part (IV) in accomplishment with UNDP and GEF guidelines. Complementary to the UNDP/GEF requirements, the Government of Colombia (MME-UPME) will monitor the Project according to its internal procedures and quality standards.
36. **Output #5.2 Lessons learned collected, prepared and disseminated.** This output will collect useful experiences from the Project for the national Government and for UNDP/GEF as input for future programming and horizontal learning.

Investment pilot (Outcome 4):

37. A portfolio of chiller replacement projects will be developed for funding from existing credit facilities in the country for EE projects (e.g., Bancoldex). Out of this portfolio of projects, 13 will be selected and implemented under the Project with financial support from the MLF and committed debt capital (Bancoldex). A selection mechanism will be designed and applied in choosing the 13 beneficiary companies. The same selection mechanism will be applied for determining eligible companies who could avail of the financial support from Bancoldex and possibly other like-minded banks/financial institutions. This strategy not only allows for phased replacement of a larger number of chillers, but also brings the chiller replacement projects in line with the objectives of existing EE project support mechanisms in the country (e.g., credit line by Bancoldex, and possibly other financiers)²⁹.
38. While at present a few chiller owners have replaced obsolete installations during recent years at their own expense, the large majority has not. Many owners expected significant financial support and technical assistance from the Government (partly derived from the MLF and GEF initiatives); expectations that were not fulfilled since both donors aim at leveraging additional, external investment capital; while the project preparation process itself also suffered substantial delay. As a result, chiller owners are now faced with the imminent ban on CFC imports by 2010.
39. The options for chiller's owners are: (a) replacing obsolete chillers by modern, CFC-free systems³⁰; (b) running the chillers on a mix of CFC-refrigerant and compatible refrigerants available on the market; (c) refill the chillers, when required, using recycled CFC-refrigerants that remain within Colombia.

PART III: Management Arrangements

40. The project will be implemented under UNDP's National Execution modality (NEX), implying that a Government entity will assume responsibility for executing the project. This modality assists in developing ownership within the host country and helps creating the conditions for sustainability.

²⁹ The pilot program that was originally conceived was intended to enhance the MLF initiative and prepare chiller owners for the ban of CFC-based refrigerants by the year 2010. Out of a list of identified chillers (See Sec IV, Part VI), the Ministry established a shortlist of 13 chillers, i.e. based on demonstrating replication among different end-users.

³⁰ This is the preferable option from the perspective of environmental benefits (both CFC and EE).

UNDP is responsible to the GEF Council as the GEF Implementing Agency in charge of the financial administration and for obtaining the envisaged project outcomes. The Ministry of Mines and Energy (MME), through its planning unit UPME, will serve as the Executing Agency for the Project and be responsible for day-to-day implementation of the project and the advances towards meeting the specified objectives.

Project Level

41. The Project will establish a Project Management Unit (PMU) consisting of the Project Coordinator and an Administrator. The PMU will be hosted by UPME. The Project Coordinator will be responsible for the day-to-day project operations, financial accounts, periodic reporting to UNDP-CO and for allocation of the GEF grant according to the quarterly work plans and budgets in coordination with UNDP-CO. The Project Coordinator will be the primary contact person for the Project for external communication and will act as the convener for meetings between the UPME and UNDP. While the PMU will be dedicated to planning, supervision and administrative tasks, the Project Working Group (PWG) will work in-depth on the technical issues addressed by the Project.
42. The project will contract one full-time Project Coordinator; GEF budget for this position is available only for Project year 1; this position will be financed by the Government of Colombia during project year 2 and 3 (in-kind contribution). A full-time Administrator will be contracted with GEF budget during three years.

Activity level

43. UPME will establish an internal PWG and assign two (2) professionals with experience in EE to this group who will be dedicated to the Project on a full-time basis. The Project will complement this group with two (2) additional experts, funded from the GEF budget, to bundle the human resources necessary for the successful implementation of the Project's activities. The Project's exit strategy aims at the incorporation of this Working Group within the national EE agency (NEEA), once it has been created. The Working Group will be headed by a Technical Project Leader, who can be either assigned by UPME or contracted by the Project. It is important that UPME addresses the Working Group through the PMU in order to preserve the integrity of the Project. (Please refer to the Organigram in Part III, which explains the division between the institutional, project and activity levels.)

Institutional Level

44. UNDP-CO and MME-UPME will each assign a staff member who will be accountable for implementation of the Project. In case of UNDP-CO this will be the Programme Officer in charge; for MME-UPME it will be the person who assumes responsibility for the Project on behalf of the national Government (the "Project Director").
45. The Programme Officer and Project Director will take place in the Project Steering Committee (PSC) together with the Project Coordinator, Administrator and Technical Project Leader. The PSC will meet quarterly to review progress and obstacles and to decide upon strategic or critical issues. The PSC is the highest decision-making authority of this project. The PSC meetings will be called by the Project Coordinator and extraordinary meetings will be held if deemed necessary by one of the PSC members. Representatives from UNDP/GEF RCU and HQ can assist and, if appropriate, the PSC can invite external consultants to assist in the monitoring process.

46. To interact with stakeholders at the institutional level, it is foreseen that UPME will advocate the representation of the Project, through its Technical Project Leader, in the existing inter-ministerial CIURE committee. The CIURE reunites the most important stakeholders regarding EE in Colombia. It is expected that the Project's presence at this level will generate important feedback and will prove effective to disseminate project outputs among stakeholders. The Project Leader will submit records of CIURE meetings to the PMU.

Acknowledgement of UNDP and the GEF

47. In order to accord proper acknowledgement to GEF for providing funding, a GEF logo should appear on all relevant GEF project publications, including among others, project hardware and vehicles purchased with GEF funds. Any citation of publications regarding projects funded by GEF should also accord proper acknowledgement to the GEF. Since UN visibility is important for security purposes, the UNDP logo should possibly appear more prominently - and separated - from the GEF logo on hardware items (in particular on vehicles).

PART IV: Monitoring and Evaluation Plan and Budget

48. Project monitoring and evaluation (M&E) will be conducted in accordance with established UNDP and GEF procedures and be led by the project team and the UNDP Country Office (UNDP-CO) with support from UNDP/GEF. The Strategic Results Framework (SRF, see Section II) provides performance and impact indicators with their corresponding means of verification. The SRF will be the reference for monitoring the project's implementation and for (independent) evaluation of performance and impact. The project management unit will prepare a detailed M&E plan to be presented at the Inception Workshop. This Workshop (see below) provides a platform for reviewing and fine-tuning of indicators and means of verification, in a manner consistent with the expected outcomes for the project.

Monitoring and reporting

49. Project monitoring consists of a number of day-to-day and periodic activities, including: (i) day to day monitoring by the PMU (Project Coordinator); (ii) periodic monitoring by UNDP-CO (Programme Officer) on a quarterly basis or more frequent if appropriate; and (iii) annual monitoring through Tripartite Reviews (MME, UNDP-CO, UNDP/GEF). UNDP-CO and the UNDP/GEF Regional Coordinating Unit will conduct visits to the project and field sites on a yearly basis or more often if agreed upon in the Annual Work Plan.
50. Project monitoring reporting consists of the periodical submission of standard report by the PMU to UNDP-CO: (i) project Inception Report, to be prepared immediately after the Inception Workshop; (ii) harmonized Annual Progress Report/Project Implementation Review, which is used by UNDP-CO, and UNDP/GEF RCU for review of project progress and as input for reporting at an aggregate level; (iii) quarterly progress reports, outlining main updates in project progress; (iv) project terminal report, to be prepared within three months before project termination.
51. For a detailed description of UNDP and GEF M&E mechanisms and requirements, please refer to the appropriate manuals.

52. In addition to this M&E Plan, the chiller replacement pilot projects will be monitored as to the performance of the chiller system before and after the chiller replacement. A monitoring system that includes on-site installed and hand-held measuring instruments will be incorporated in the project and implemented to gauge the chiller system and equipment performance (e.g., EER, TR/kW) and evaluate the energy savings and corresponding CO2 emission reductions.

Inception Workshop and Report

53. The key objective of the Inception Workshop is to assist the project team to understand and take ownership of the Project's goals and objectives and to finalize the first Annual Work Plan (AWP). The Inception Workshop will be convoked by the PMU (Project Coordinator) within two months after project start-up and be assisted by the host Government (Executing Agency and other counterparts), co-financing partners, UNDP-CO and UNDP/GEF RCU. Representatives from UNDP-GEF headquarters can assist as appropriate. UNDP-CO will provide assistance to the Executing Agency during the inception phase.
54. The Inception Workshop provides an opportunity for all parties to understand their roles, functions, and responsibilities within the project's decision-making structures, including reporting and communication lines, and mechanisms for conflict resolution. The Terms of Reference for project staff and decision-making structures will be discussed again, as needed.
55. The Inception Report will be prepared immediately following the Inception Workshop and will include the detailed Annual Work Plan for the first year, divided in quarterly periods, specifying: (i) the activities and progress indicators that will guide implementation; (ii) the project budget for the first full year of implementation; and (iii) monitoring and evaluation requirements to effectively measure project performance during the first year. The AWP will include a calendar of specific field visits, support missions from the UNDP-CO and RCU or consultants, as well for meetings of the Project's decision-making structures.
56. The Inception Report will further include a more detailed narrative on the institutional roles, responsibilities, coordinating actions and feedback mechanisms of project related partners. In addition, a section will be included on progress to date on project establishment and start-up activities and an update of any changed external conditions that may affect project implementation. When finalized the report will be circulated to project counterparts who will be given a period of one month to respond. Prior to this, UNDP-CO and UNDP/GEF RCU will review the document.

Annual Project Report (APR) / Project Implementation Review (PIR)

57. The Annual Project Report is a UNDP requirement, providing input for the CO reporting process and for the Project's Tripartite Project Review (TPR). The APR will be prepared on an annual basis prior to the TPR to reflect progress achieved in meeting the project's Annual Work Plan and assess project performance towards the outcomes set forth.
58. The Project Implementation Review (PIR) is an annual monitoring process mandated by the GEF. A Project Implementation Report must be completed by the CO together with the project team. The PIR is ideally prepared prior to the Tripartite Review, where it can be discussed and agreed upon by the project team, the Executing Agency, UNDP CO. The GEF M&E Unit provides instructions concerning the scope and content of the yearly PIRs. The PIR is reviewed by the UNDP/GEF Regional Coordinating Unit prior to sending them to the Focal Area clusters at the UNDP/GEF headquarters.
59. In light of the similarities between UNDP's Annual Project Review and GEF's PIR, UNDP/GEF has prepared a harmonized format.

Quarterly Progress Reports (QPR)

60. Quarterly Progress Reports are short reports outlining updates on project progress on key issues that are to be provided to UNDP CO and the UNDP-GEF regional office by the project team. A standard format will be made available by UNDP.

Mid-Term Evaluation (MTE)

61. The Mid-Term Evaluation will determine progress being made towards the achievement of outcomes and will identify corrective actions if needed. It will focus on the effectiveness, efficiency and timeliness of project implementation; will highlight issues requiring decisions and actions; and will present initial lessons learned about project design, implementation and management. Findings of this review will be incorporated as recommendations for enhanced implementation during the second half of the project's term. The MTE will take place after approx. 50% of the project execution time (after 18 months), unless otherwise agreed with UNDP. The terms of reference for the MTE will be prepared by UNDP CO based on guidance from the Regional Coordinating Unit and UNDP-GEF.

Final Evaluation (FEV)

62. An independent Final Evaluation will take place three months prior to the terminal TPR meeting. The FEV will focus on similar issues as the MTE and further look at impact and sustainability of results, including the Project's contribution to capacity development and to the achievement of global environmental goals. The FEV will also provide recommendations for follow-up activities. The terms of reference will be prepared by UNDP CO based on guidance from the Regional Coordinating Unit and UNDP-GEF.
63. The budget for M&E is US\$ 195,000 (US\$ 60,000 GEF grant, US\$ 15,000 co-financing from the Government of Colombia and US\$ 120,000 from UNDP CO). The following table gives a tentative allocation of the budget over the main items:

Indicative Monitoring and Evaluation Work plan and corresponding Budget

Type of M&E activity	Responsible Parties	Budget US\$ <i>Excluding project team Staff time</i>	Time frame
Inception Workshop	Project Coordinator UNDP CO UNDP GEF	35,000	Within first two months of project start up
Inception Report	Project Team UNDP CO	None	Immediately following IW
Measurement of Means of Verification for Project Purpose Indicators	Project Coordinator will oversee the hiring of specific studies and institutions, and delegate responsibilities to relevant team members	To be finalized in Inception Phase and Workshop. Indicative cost None	Start, mid and end of project
Measurement of Means of Verification for Project Progress and Performance (measured on an annual basis)	Oversight by Project GEF Technical Advisor and Project Coordinator Measurements by regional field officers and local IAs	To be determined as part of the Annual Work Plan's preparation. Indicative cost 5,000	Annually prior to APR/PIR and to the definition of annual work plans
APR and PIR	Project Team UNDP-CO UNDP-GEF	None	Annually
TPR and TPR report	Government Counterparts UNDP CO Project team UNDP-GEF Regional Coordinating Unit	None	Every year, upon receipt of APR
Steering Committee Meetings	Project Coordinator UNDP CO	None	Following Project IW and subsequently at least once a year
Periodic status reports	Project team	None	To be determined by Project team and UNDP CO
Technical reports	Project team Hired consultants as needed	None	To be determined by Project Team and UNDP-CO
Mid-term External Evaluation	Project team UNDP- CO UNDP-GEF Regional Coordinating Unit External Consultants (i.e. evaluation team)	22,500	At the mid-point of project implementation.
Final External Evaluation	Project team, UNDP-CO UNDP-GEF Regional Coordinating Unit External Consultants (i.e. evaluation team)	32,500	At the end of project implementation
Terminal Report	Project team UNDP-CO External Consultant	None	At least one month before the end of the project
Lessons learned	Project team UNDP-GEF Regional Coordinating Unit (suggested formats for documenting best practices, etc)	15,000	Yearly
Audit	UNDP-CO Project team	10,500	Yearly
Visits to field sites (UNDP staff travel costs to be charged to IA fees)	UNDP Country Office UNDP-GEF Regional Coordinating Unit (as appropriate) Government representatives	19,500	Yearly
External expert/verification missions	Project team UNDP- CO External Consultants (i.e. evaluation team)	10,000	At the end of project implementation
Staff support, meetings, reporting	UNDP- CO Project team	50,000	Trough out project
TOTAL INDICATIVE COST		US\$ 195,000	

PART V: Legal Context

1. This Project Document shall be the instrument referred to as such in Article I of the Standard Basic Assistance Agreement between the Government of Colombia and the United Nations Development Programme, signed by the parties on May 1974. The host country implementing agency shall, for the purpose of the Standard Basic Assistance Agreement, refer to the government co-operating agency described in that Agreement.
2. *The UNDP Resident Representative in Colombia is authorized to effect in writing the following types of revision to this Project Document, provided that he/she has verified the agreement thereto by the UNDP-GEF Unit and is assured that the other signatories to the Project Document have no objection to the proposed changes:*
3. *Revision of, or addition to, any of the annexes to the Project Document;*
4. *Revisions which do not involve significant changes in the immediate objectives, outputs or activities of the project, but are caused by the rearrangement of the inputs already agreed to or by cost increases due to inflation;*
5. *Mandatory annual revisions which re-phase the delivery of agreed project inputs or increased expert or other costs due to inflation or take into account agency expenditure flexibility; and*
6. *Inclusion of additional annexes and attachments only as set out here in this Project Document.*

SECTION II: STRATEGIC RESULTS FRAMEWORK AND GEF INCREMENT

Project Strategy		Objectively verifiable indicators				Risks and Assumptions
		Indicator (quantified and time-bound)	Baseline	Target	Sources of verification	
Goal	To reduce greenhouse gas emissions from the building sector in Colombia through the implementation of a comprehensive package of activities to improve the energy efficiency of commercial, public and residential buildings. An associated goal is to reduce emissions of ozone-depleting substances from CFC-based centrifugal chillers.	(1) Directly avoided CO2 emissions (tons CO2). (2) Indirectly avoided CO2 emissions (tons CO2).	(1) No direct CO2 emission savings. (2) No indirect CO2 emission savings.	(1) Direct CO2 emission savings: 62,000 tons CO2. (2) Indirect savings due to replication: 124,400 tons CO2; due to market transformation: 150,000 tons CO2.	Not verified during project lifetime	Medium and long-term commitment of the Government to maintain a conducive policy environment beyond the time horizon of the Intervention
Objective of the project	To promote energy efficiency in buildings by removing the institutional, legal and regulatory capacity and technical barriers that presently limit its widespread adoption.	(1) Market transformation (scale 1..4). (2) Policy adoption (scale 1..4). (3) Saved volume of energy (MWh). (4) Investments (US\$). (5) Number of lending institutions.	(1) Market transformation: 1. (2) Policy adoption: 1. (3) Saved energy: 0 MWh. (4) Investments US\$ 0. (5) No. Lending institutions: 1 (Bancoldex-URE)	(1) Market transformation: 3. (2) Policy adoption: 4. (3) Saved energy: 88,600 MWh. (4) Investments (direct) US\$ 3.2 M. (5) No. lending institutions: 1 (Bancoldex-URE)	(1 and 2) judgments made by Project Coordinator and independent evaluators. (3) Use yearly savings as a proxy. (4). Project reports, audits. (5) This GEF objective is not directly pursued by the project (no verification needed)	The Government perceives EE in buildings as a priority and defines and implements an enabling policy and legal framework, including specific instruments. Building professionals and (potential) energy service companies are motivated to serve the market.
Outcome 1	Government institutions responsible for promoting energy efficiency have been strengthened	Number of persons added to UPME by the Project; total time dedicated to UPME to EE policy and programme development, and NEEA preparation	Capacity within UPME to prepare and execute energy efficiency (EE) programs and to prepare a national EE agency (NEEA) will be limited	Capacity within UPME will be expanded by 6.0 person-years, such that EE and NEEA development can be properly addressed. The exit strategy envisages integration of this working_group into the NEEA.	Periodic reports by UPME; audits	Effective support will be given to the Project and UPME by the Government.
1.1	An ad hoc project group on EE is established within UPME	Number of persons added to UPME by the Project; total time dedicated to UPME to EE policy and programme development, and NEEA preparation	Capacity within UPME to prepare and execute energy efficiency (EE) programs and to prepare a national EE agency (NEEA) will be limited	Capacity within UPME will be expanded by 6.0 person-years, such that EE and NEEA development can be properly addressed. The exit strategy envisages integration of this working_group into the NEEA.	Periodic reports by UPME; audits	Effective support will be given to the Project and UPME by the Government.
1.2	A national EE agency (NEEA) with mandate to implement and promote EE programs and policies has been designed and a law proposal for its enactment, presented	Approved law proposal for NEEA; Approved business plan and budget for NEEA; formal creation and operation of the NEEA	No legislation to create a NEEA will be in place; no business plan will be available; no NEEA will be created	A law proposal (1) will be drafted enabling the formal creation of the NEEA by the State. An appropriate business plan (1) will be in place. Ultimately, the Project envisages the NEEA to become formally operational at the end of the project.	Official State publications; report containing business plan; first activities of NEEA	Effective support will be given to the Project and UPME by the government. The Project and UMPE succeed in mobilizing sufficient political support in order to have a law proposal for the NEEA accepted.
Outcome 2	Policies, regulations and standards to promote energy efficiency in buildings have been developed and implemented	List of regulations and documents describing EE activities and programs under PROURE.	Lack of specific regulations and programs to promote EE in buildings	Specific regulation on the issues (i... iv) has been developed and implemented.	Annual reports by UPME; formal State publications	Government support is required to define and support a detailed working agenda under PROURE.
2.1	The PROURE program has been strengthened by developing and implementing specific regulation to promote EE in buildings, concerning: (i) provision of energy services for public and non-public buildings; (ii) energy audits; (iii) certification of energy professionals; (iv) energy service companies (ESCOs)	List of regulations and documents describing EE activities and programs under PROURE.	Lack of specific regulations and programs to promote EE in buildings	Specific regulation on the issues (i... iv) has been developed and implemented.	Annual reports by UPME; formal State publications	Government support is required to define and support a detailed working agenda under PROURE.

Project Strategy		Objectively verifiable indicators				Risks and Assumptions
Indicator (quantified and time-bound)	Baseline	Target	Sources of verification			
2.2	National standards for EE in buildings have been developed, including energy audits and energy management.	No national standards for EE in buildings will be in place; energy audits, energy management plans and feasibility studies for large EE investments, will hardly develop	Three (3) standards developed, e.g. thermal quality of buildings. Protocol for energy audits in buildings developed. Guidelines for energy management plans developed.	Reports and Official State publications; reports of energy audits and feasibility studies conducted	Government support is required to define and support a detailed working agenda under PROURE, in particular to develop EE standards.	
2.3	Incentives for EE investments have been analyzed by UPME as input for policy development	During the project time horizon, little or no work will be done to prepare a financial incentive aimed at investments in EE in buildings	Policy support document analyzing financial incentives for EE in buildings, has been delivered	Policy support report	Desk study: no risks or specific assumptions.	
Outcome 3	Technical knowledge and capacity among key stakeholders have been enhanced	Inadequate knowledge and technical skills exist among key professionals, suppliers and potential customers	Training and informational material produced and distributed among key professionals, suppliers and customers; courses on EE prepared and carried out for key professionals and suppliers; at least 75 professionals trained	Training and information material; reports of courses given; list of professionals trained	It is assumed that building professionals show a genuine interest in training, in response to market signals.	
3.1	Awareness and knowledge about EE among building engineers, architects, compliance officers, EE product suppliers and customers, have increased	Production of training and informational material; preparation and execution of training courses; number of professionals trained	TA program has been designed and implemented; the exit strategy envisages continuation of the TA program by NEEA support and private sector involvement. The delivery of at least 10 feasibility studies for HVAC replacement projects.	Progress reports; project and feasibility studies carried out under the TA component	It is assumed that the technical and financial profile for the envisaged chillers projects stimulate market partners (suppliers, building owners, financiers) to cooperate in a comprehensive TA program and subsequent investment	
3.2	A technical assistance program for the replacement of inefficient, CFC-using chillers, has been implemented	Design of a technical assistance (TA) program to replace inefficient and CFC-using chillers; implementation of the TA program; delivery of feasibility studies for replacement of HVAC installations	Information material available among at least 3 major suppliers and in 10 major cities in Colombia	Existence of documents; visits to suppliers	No specific risks or assumptions	
3.3	Compiled and disseminated project guidelines, analytical tools and product documentation	Production of technical guidelines for large chiller projects; availability of guidelines (documents, AV material) among stakeholders				
Outcome 4	Energy savings realized from the replacement of inefficient chillers	(1) No formal selection mechanism; (2) No chiller projects accepted; (3) Shortlist of 58 projects identified; (4) no capital available for replication	(1) Call for projects issued under a replicable mechanism; (2) At least 13 chiller projects accepted for execution; (3) At least 25 projects under development for replication; (4) indicative 4 M US\$ leveraged for replication	Official State publications; site visits and project (monitoring) reports; reports from credit suppliers	Government support is continued and financing sector encouraged to invest in EE/CFC-free technology; identified projects are technically and financially viable	
4.1	A selection mechanism has been prepared to call for project proposals for chiller replacement, including the development of a project portfolio for replication	(1) Emission of a call (or selection protocol) to receive chiller replacement proposals; (2) number of chiller projects accepted for replacement; (3) number of total projects under development; (4) amount of leveraged capital for replication	At least 13 chillers replaced; minimum capacity target 3,000 TR	Project implementation reports; site visits; audits	It is assumed that at least 13 chiller replacement projects are financially sound and bankable; and that they can be finalized within the time horizon of the intervention.	
4.2	Confirmed investment for 13 chiller projects with committed co-financing (lending) resources and support from the MILF	Number of inefficient, CFC-using chillers replaced under TA support from the Project; total cooling capacity (tons, BTU) substituted			No specific risks or assumptions	
4.3	Selected projects have been monitored before and after chiller replacement to verify the actually achieved GHG benefits.	Direct emissions avoided by selected chiller projects	(1) Measurements of energy use by obsolete chillers; (2) GHG emissions according to existing technology.	Measurements and audits; final report		
Outcome 5	A monitoring and evaluation plan has been implemented					

Project Strategy		Objectively verifiable indicators				
		Indicator (quantified and time-bound)	Baseline	Target	Sources of verification	Risks and Assumptions
5.1	Monitoring and evaluation plan has been implemented	Requirements described in the Monitoring and Evaluation Plan, including: periodic reviews by UNDP and GEF, delivery of reports by the Project to UNDP CO, execution of mid-term and final evaluation	A monitoring plan has been included in the ProDoc	The monitoring plan is deployed progressively during the lifetime of the project. At project end, the monitoring plan has been fully executed.	Project monitoring reports; project visits; independent evaluations (including mid-term and final evaluation)	It is assumed that UNDP/GEF M&E principles are correctly understood by the Project partners.
5.2	Lessons learned collected, prepared and disseminated	Compilation of lessons learned by UPME and independent evaluators; summary of lessons learned produced and made available to UNDP/GEF, the Government of Colombia and other relevant actors in Colombia	Little insight in best practices concerning large-scale EE in buildings in Colombia is available. No lessons learned have been collected and distributed	Substantial insight in best practices to promote EE in buildings in Colombia, exist. Lessons learned have been collected and distributed	Internal project reports and external evaluations	It is assumed that UNDP/GEF M&E principles are correctly understood by the Project partners.

INCREMENTAL COST MATRIX

Outcomes/ Benefits	Baseline	Alternative	Increment (Alternative minus Baseline)
<p>Outcome 1: Government institutions responsible for promoting energy efficiency have been strengthened</p>	<p>No government entities in place with a mandate to prepare and execute EE programmes targeted at market actors (specifically in building sector). Policy development (PROURE and Decrees) will prove largely ineffective due to this barrier. Cost: US\$ 0</p>	<p>Targeted technical assistance will create a working group within UPMIE-MME to prepare a national EE Agency with a strong executing mandate. Cost: US\$ 278,000 (GEF) US\$ 325,000 (GoC, in-kind)</p>	<p>Government institutions responsible for the promotion of EE have been strengthened and evolved into a national EE Agency. Incremental Cost: US\$ 278,000 (GEF) US\$ 325,000 (GoC, in-kind)</p>
<p>Outcome 2: Policies, regulations and standards to promote energy efficiency in buildings have been developed and implemented</p>	<p>The development of policies, regulations (including incentives) and technical standards focused on EE in buildings will be limited under the current PROURE programme. There will be mandate to implement and enforce policies. Cost: US\$ 0</p>	<p>Policies, regulations and technical standards focused on EE in buildings will be prepared and enacted, including regulation to facilitate delivery mechanisms for EE (such as ESCOs, energy audits and certification of EE experts). Cost: US\$ 250,000 (GEF) US\$ 235,000 (GoC, in-kind)</p>	<p>Improved policy, regulation and technical standards will create clear market conditions at the operational level, enabling market actors to respond. Incremental Cost: US\$ 250,000 (GEF) US\$ 235,000 (GoC, in-kind)</p>
<p>Outcome 3: Technical knowledge and capacity among key stakeholders have been enhanced</p>	<p>In the absence of a strong market demand, building experts do not develop professional skills in the field of EE designs, equipment and methodologies. Capacities and awareness among end-users, project developers and the general public are low. The replacement of large CFC-based chillers under the OTU/MLF project is hampered by a lack of technical skills and ineffective project preparation. Cost: US\$ 0</p>	<p>The implementation of a programme on EE in buildings, focused on legislation, technical standards and HVAC, will create capacity among key professionals to function in an EE market. The replacement of CFC-based chillers will be facilitated by trained personnel, technical studies and liaison activities among involved stakeholders. Cost: US\$ 235,000 (GEF) US\$ 200,000 (GoC, in-kind) US\$ 180,000 (private sector: suppliers, professionals)</p>	<p>Technical knowledge and capacity on EE designs, equipment and methodologies in buildings has been enhanced among key professionals. Existing capacity barriers to replace large CFC-based chillers under the OTU/MLF project have been reduced. Incremental Cost: US\$ 235,000 (GEF) US\$ 200,000 (GoC, in-kind) US\$ 180,000 (private sector: suppliers, professionals)</p>
<p>Outcome 4: Energy savings realized from the replacement of inefficient chillers</p>	<p>No replacement of a first batch of 13 large, inefficient CFC-based chillers under the OTU/MLF project and no replication mechanism in place. Cost: US\$ 0</p>	<p>Investment in 13 modern, CFC-free chiller installations as a showcase for potential end-users, suppliers and financiers, including portfolio development and creation of a mechanism for replication (call for tender with improved access to financing). Cost: US\$ 55,000 (GEF) US\$ 65,000 (GoC, in-kind) US\$ 2,150,000 (private sector) US\$ 1,000,000 (MLF)</p>	<p>13 large, inefficient CFC-based chillers have been replaced, including portfolio development and creation of a mechanism for replication. Incremental Cost: US\$ 55,000 (GEF) US\$ 65,000 (GoC, in-kind) US\$ 2,150,000 (private sector) US\$ 1,000,000 (MLF)</p>
<p>Outcome 5: A monitoring and evaluation plan has been implemented</p>	<p>No monitoring and evaluation activities according to UNDP/GEF guidelines will take place. Cost: US\$ 0</p>	<p>Monitoring and (independent) evaluation activities have been carried out in agreement with UNDP/GEF guidelines for M&E. Lessons learned have been collected and disseminated among national counterparts, the UNDP/GEF family and as input for future programming. Cost: US\$ 60,000 (GEF) US\$ 15,000 (GoC, in-kind) US\$ 120,000 (UNDP, in-kind)</p>	<p>Monitoring and (independent) evaluation activities have been carried out in agreement with UNDP/GEF guidelines for M&E. Lessons learned have been collected and disseminated. Incremental Cost: US\$ 60,000 (GEF) US\$ 15,000 (GoC, in-kind) US\$ 120,000 (UNDP, in-kind)</p>
<p>Global Environmental Benefits</p>	<p>In the baseline scenario, regulation on EE in buildings by the national government will remain ineffective; a baseline shift will occur due to autonomous developments in the market (mainly due to more efficient appliances).</p>	<p>The UNDP/GEF project will create a nation EE Agency with a mandate to execute EE programmes, a.o. addressing the building sector. Policy development, technical standards and improved capacities among key professionals translate into a baseline shift of approx. 2 full years. The indirect reduction in CO2 emissions are 150,000 tons as a result of this accelerated market transformation. Direct results due to chillers replacement amount to 62,000 tons CO2, and by replication 124,000 tons CO2.</p>	<p>The indirect reduction in CO2 emissions are 150,000 tons as a result of this accelerated market transformation. Direct results due to chiller replacement amount to 62,000 tons CO2, and by replication 124,000 tons CO2. The total incremental cost is: US\$1,000,000 (GEF)</p>
<p>Domestic</p>	<p>Increased thermal-based power generation</p>	<p>The projected 4% annual increase in energy demand will be deflected as a</p>	<p>There will be a lower net emission of particles,</p>

Outcomes/ Benefits	Baseline	Alternative	Increment (Alternative minus Baseline)
Environmental Benefits	will add to local emission of particles and NOx, SOx.	result of EE saving measures in the building sector. Particle, NOx and SOx emissions will be lower than forecasted.	NOx and SOx than forecasted in the absence of the UNDP/GEF CO-Efficiency project.

SECTION III: TOTAL BUDGET AND WORKPLAN

Award ID:		000						
Award Title:		PIMS 3829 CC MSP Colombia Energy Efficiency in Buildings						
Business Unit:		000						
Project Title:		PIMS 3829 CC MSP Colombia Energy Efficiency in Buildings						
Implementing Partner/Executing Agency:		Ministry of Mines and Energy – Mining and Energy Planning Unit (MME-UPME)						
GEF Outcome / Atlas Activity	Resp. Party (Implm. Agent)	Fund ID / Donor name	Atlas Budget Account Code	ERP/ATLAS Budget Description/Input	Amount (USD) Year 1	Amount (USD) Year 2	Amount (USD) Year 3	Total (USD)
Outcome 1: Government institutions responsible for promoting energy efficiency have been strengthened	UPME	62000 GEF	71200	International Consultants	10,500	12,500	0	23,000
			71300	Local Consultants	52,500	75,000	75,000	202,500
			71600	Travel	3,000	6,500	3,000	12,500
			72100	Contractual Services-Companies	0	25,000	0	25,000
			72200	Equipment and Furniture	10,000	0	0	10,000
			74500	Miscellaneous Expenses	0	2,500	2,500	5,000
sub-total					76,000	121,500	80,500	278,000
Outcome 2: Policies, regulations and standards to promote energy efficiency in buildings have been developed and implemented	UPME	62000 GEF	71200	International Consultants	17,500	30,000	15,000	62,500
			71300	Local Consultants	17,500	30,000	25,000	72,500
			71600	Travel	2,500	8,500	4,000	15,000
			72100	Contractual Services-Companies	25,000	35,000	25,000	85,000
			74200	AV and Print Production costs	0	2,500	2,500	5,000
			74500	Miscellaneous Expenses	5,000	2,500	2,500	10,000
sub-total					67,500	108,500	74,000	250,000
Outcome 3: Technical knowledge and capacity among key stakeholders have been enhanced	UPME	62000 GEF	71200	International Consultants	5,000	15,000	17,500	37,500
			71300	Local Consultants	0	22,500	25,000	47,500
			71600	Travel	7,500	20,000	15,000	42,500
			72100	Contractual Services-Companies	0	45,000	35,000	80,000
			72200	Equipment and furniture	0	5,000	0	5,000
			74200	AV and Print Production costs	4,500	6,000	6,000	16,500
74500	Miscellaneous Expenses	0	2,500	3,500	6,000			
sub-total					17,000	116,000	102,000	235,000
Outcome 4: Energy savings realized from the replacement of inefficient chillers	UPME	62000 GEF	71200	International Consultants	0	0	0	0
			71300	Local Consultants	11,500	17,500	25,000	54,000
			71600	Travel	0	0	1,000	1,000
			71400	Contractual Services-Companies	0	0	0	0
			74500	Miscellaneous Expenses	0	0	0	0
Sub-total					11,500	17,500	26,000	55,000
Outcome 5: A monitoring and evaluation plan has been implemented	UPME	62000 GEF	71200	International Consultants	0	12,500	20,000	32,500
			71300	Local Consultants	4,000	5,000	6,500	15,500
			71600	Travel	1,000	3,500	5,500	10,000
			74500	Miscellaneous Expenses	0	1,000	1,000	2,000
Sub-total					5,000	22,000	33,000	60,000
Project Management Unit	UPME	62000 GEF	71300	Local Consultants	54,000	17,500	17,500	89,000
			71600	Travel	0	2,500	1,500	4,000
			72200	Equipment and furniture	3,000	0	0	3,000
			74500	Miscellaneous Expenses	0	500	500	1,000
Sub-total					57,000	20,500	19,500	97,000
TOTAL					234,000	406,000	335,000	975,000

Totals per Donor:

GEF	\$975,000
UNDP CO (In-kind)	\$150,000
GoC (In-kind)	\$965,000
MLF Multilateral Fund (cash)	\$1,000,000
Private sector (cash)	\$2,330,000
Total	\$5,420,000

SECTION IV: ADDITIONAL INFORMATION

PART I: Approved MSP PIF



PROJECT IDENTIFICATION FORM (PIF)
PROJECT TYPE: Medium-sized Project
THE GEF TRUST FUND

Submission Date: September 2007

Re-submission Date: December 2007

PART I: PROJECT IDENTIFICATION

GEFSEC PROJECT ID¹: 3479

GEF AGENCY PROJECT ID: 3829

COUNTRY (IES): Colombia

PROJECT TITLE: 'CO-EFFICIENT', Improving Energy Efficiency in Buildings in Colombia through Synergies between Environmental Conventions

GEF AGENCY (IES): UNDP

OTHER EXECUTING PARTNERS: Unidad de Planeación Minero Energética (UPME) of the Ministry of Energy Mining

GEF FOCAL AREAS: Climate Change

GEF-J STRATEGIC PROGRAM(S): CC- SP1

NAME OF PARENT PROGRAM/UMBRELLA PROJECT: N/A

INDICATIVE CALENDAR	
Milestones	Expected Dates
Work Program (for FSP)	2007
CEO Endorsement Approval	August 2008
GEF Agency Approval	September 2008
Implementation Start	October 2008
Mid-term Review	December 2009
Implementation Completion	April 2011

A. PROJECT FRAMEWORK

Project Objective: To promote energy efficiency in buildings by removing the institutional, legal and regulatory, capacity and technical barriers that are limiting its widespread adoption.

Project Component		Expected Outcomes	Expected Outputs	Indicative GEF Financing*		Indicative Co-financing*		Total (\$)
				(\$)	%	(\$)	%	
Institutional, Legal and Regulatory	TA	Regulations and institutions to promote energy efficiency in buildings are developed, enacted and established	-A National Energy Efficiency Agency is conceived and a law proposal for its establishment is formulated. -Public building policies and regulations to promote energy efficiency are developed and enacted.	270,000	64	150,000	36	420,000
Technical and Financial	TA	Demand and supply for energy efficiency services and technology stimulated	-Technical assistance program for the replacement of inefficient and CFC using chillers established. -Number of energy audits and feasibility studies increased -Appliances and installation guidelines for key (E.V.A.C) products available at sale points.	225,000	8	3,650,000	92	3,875,000
Capacity building	TA	Building engineers, architects, compliance officers, suppliers, universities and public are convinced of importance and market opportunities for building energy efficiency and saving and their capacities enhanced	-Local capacities on energy efficiency of building engineers, architects, compliance officers, policy makers, financial sector, universities and suppliers enhanced. -Information on costs and benefits of demand side management (DSM) and building energy efficiency understood by service suppliers and policy makers. -Awareness of building energy saving opportunities improved	350,000	27	590,000	73	1,340,000
Monitoring	TA	Monitoring and evaluation	-Monitoring and evaluation work plan implemented -Lessons learned collected, prepared and disseminated	33,000	77	10,000	23	43,000
Project management				57,000	20	245,000	72	342,000
Total Project Costs				975,000	18	4,445,000	82	5,420,000

* List the \$ by project components. The percentage is the share of GEF and Co-financing respectively to the total amount for the component.

**TA=Technical Assistance; STA=Scientific & technical analysis.

¹ Project ID number will be assigned initially by GEFSEC.

B. INDICATIVE FINANCING PLAN SUMMARY FOR THE PROJECT (\$)

	Project Preparation	Project	Agency Fee	Total
GEF Grant	25,000	975,000	100,000	1,100,000
Co-financing	15,000	4,445,000		4,460,000
Total	40,000	5,420,000	100,000	5,560,000

*Please include the previously approved PPGs and planned request for new PPG, if any. Indicate the amount already approved as footnotes here and if the GEF funding is from GEF-3.

C. INDICATIVE CO-FINANCING FOR THE PROJECT (including project preparation amount) BY SOURCE AND BY NAME (in parenthesis) if available, (\$)

Sources of Co-financing	Type of Co-Financing	Total
Project Government Contribution	In-kind	445,000
Multilateral Agency (MLF)	Cash	1,000,000
Private Sector	Cash	3,000,000
Total Co-financing		4,445,000

PART II: PROJECT JUSTIFICATION

A. STATE THE ISSUE, HOW THE PROJECT SEEKS TO SOLVE IT, AND THE EXPECTED GLOBAL ENVIRONMENTAL BENEFITS TO BE DELIVERED:

The project aims at promoting energy efficiency in buildings by removing the barriers that are currently hindering its dissemination and reinforcing the development of a market approach in the existing stock of buildings. Achieving the project objective will ensure that energy is used effectively and rationally in Colombia.

The project will promote the transformation of the energy efficiency in buildings market in Colombia by removing the institutional, legal and regulatory, capacity and technical barriers that are limiting its widespread adoption.

In particular, the project will: a) promote the adoption of energy efficiency in public buildings, b) create the necessary national capacities on energy efficiency (EE), c) encourage the replacement of energy inefficient appliances with focus on CFC using chillers and other building equipment and c) facilitate the establishment of a National Energy Efficiency Agency. This project promotes synergies between conventions by addressing both climate change and ozone depleting substances concerns.

The project activities result in a direct reduction of approximately 274,000 tons of CO₂ equivalent and an indirect emissions reductions estimated in 306,000 tons of CO₂e over a period of 20 years through increasing the energy efficiency in buildings, substitution of inefficient appliances as well as the elimination of CFCs in chillers.

B. DESCRIBE THE CONSISTENCY OF THE PROJECT WITH NATIONAL PRIORITIES/PLANS:

The CO-EFFICIENCY project has been designed to effectively remove the barriers that have hindered the rational use of energy in Colombia as expressed in the recently published National Energy Plan 2006-2025 which estimates an increment in energy use of 49% during this period resulting in the additional emission of 27 million tons of CO₂ and recognizes the need to work towards the use of renewable energy and the promotion of energy efficiency. The study identifies the following barriers that have hindered the rational use of energy:

- A complex and inadequate institutional structure.
- Limited attention to the development of policies for the promotion of EE.
- Absence of capacity building and awareness creation on the benefits of the EE.
- Lack of a clear and stable regulatory framework that reduces financial risks related to investments in renewable energy and EE.

C. DESCRIBE THE CONSISTENCY OF THE PROJECT WITH GEF STRATEGIES AND STRATEGIC PROGRAMS:

The project is intended to overcome barriers to energy efficiency in buildings in Colombia and create the appropriate market conditions to promote investment in EE in the existing stock of buildings.

The project is therefore fully in line with the newly established GEF-4 Strategic objective: 'To promote energy-efficient technologies and practices in the appliance and building sectors', and the strategic program 1, 'Promoting energy efficiency in residential and commercial buildings'.

D. OUTLINE THE COORDINATION WITH OTHER RELATED INITIATIVES:

Colombia has developed and implemented a very limited number of GEF projects over the years, nevertheless in terms of enabling activities the country in collaboration with UNDP is carrying out an extensive work for the second national communication. Furthermore, the country has recently completed a consultative process for the preparation of the National Energy Plan for 2006-2025 that highlights the need to work on the promotion of EE in the country as a key element to reduce CO₂ emissions.

E. DESCRIBE THE VALUE ADDED OF GEF INVOLVEMENT IN THE PROJECT DEMONSTRATED THROUGH INCREMENTAL REASONING:

Energy consumption in Colombia increased 33% between 1990 and 2005 and its primary energy production grew at about 3.5% annually during the same period¹. The country shows a clear tendency to the use of coal for energy production moving from 25.7% to 46.5% of the total primary energy production between 1990 and 2005. Electricity consumption has increased over the years reaching 4.07% in 2005.

In terms of the business-as-usual scenario, it is estimated that the energy consumption in the residential sector will grow at 3.1 % and 6.3 % for the commercial sector between 2005 and 2025 where 83% of the energy will be represented by electricity.

By creating local capacities on energy efficiency of building engineers, architects, compliance officers, policy makers, financial sector, universities and suppliers, increasing information on costs and benefits of demand side management, creating public awareness on EE, facilitating the establishment of a national institutions to promote energy efficiency in buildings and supporting the development of appropriate policies and regulations, the replacement of key equipment such as chillers and the establishment of national standards for energy audits and energy management, this project will effectively contribute to the removal of key institutional, capacity and financial barriers that currently limit the widespread adoption of EE in Colombia.

The CO-EFFICIENCY project will contribute to global environmental benefits of a direct reduction of approximately 274,000 tons of CO₂ equivalent and an indirect emissions reduction estimated in 306,000 tons of CO₂e over a period of 20 years through increasing the energy efficiency of buildings, substituting inefficient appliances and eliminating inefficient CFCs using in chillers.

The CO₂ reduction calculations are based on:

Direct²

CO₂ abatement in chillers due to energy consumption reduction: 108,000 tons of CO₂e

CO₂ abatement in other building appliances due to energy consumption reduction: 45,000 tons of CO₂e

CFC elimination: 121,000 tons of CO₂e

Indirect:

108,000 + 45,000 times a replication factor of 2 (as established by the GEF calculation manual) equals 306,000 tons of CO₂e in 20 years.

Based on the findings of the National Energy Plan and a consultation process with national stakeholders, the project is designed to tackle market barriers in all areas of a building's energy use: building fabric, equipment, and users (capacities and behavior) through four project components of which the outcomes and outputs are summarized below:

Outcome 1:

Regulations and institutions to promote energy efficiency in buildings are developed, enacted and established

- A National Energy Efficiency Agency is conceived and a law proposal for its establishment is formulated. Energy efficiency is a topic that has grown in importance in the last few years becoming a central element of the National Energy Plan, however, the current institutional structure in Colombia does not have a leading national agency that can coordinate and promote all national efforts on energy efficiency. Therefore, this project will work on defining the appropriate institutional design and mandate including staffing and internal

¹ Ministerio de Minas y Energía, Plan Energético Nacional 2006-2025, Colombia 2003

² Carbon intensity of power in Colombia is 0.22Kg-CO₂/kWh. As recommended by the GEF manual a 20 year span for direct calculations was used

procedures of the national office to ensure its successful promotion and implementation of EE in Colombia. It is expected that the project will have a long lasting impact in the promotion of EE by supporting its conceptual design and formulation. It is important to notice that such an agency needs to be formally established through a law.

- Public building policies and regulations to promote energy efficiency are developed. An enabling regulatory framework for EE project development in the public sector will be established through revisions and amendments to the legal and contractual framework for the use of energy performance contracting in the public sector.

Outcome 2:

Demand and supply for energy efficiency services and technology stimulated

- Technical assistance program for the replacement of inefficient and CFC using chillers established. This program will focus on a) awareness creation and capacity building for chiller's owners and technicians, b) linking manufacturers of energy efficient such as General Electric and non-CFC chillers to potential buyers both in the private and public sectors, c) replacing at least 13 chillers and c) drafting technical guidelines for professionals. The private sector will be a key player on this component both as provider of equipment and as buyer (at least 5 chillers will be replaced from private companies). A financial incentive mechanism is expected to be established with part of the co-financing received through the MLF to stimulate the adoption of EE equipment. Some ideas such as a loan guarantee mechanism; a soft credit line and/or tax reduction incentive are being discussed with private sector institutions such as 'GE financing' and the government. A final definition of the mechanism will be done during the project preparation process.
- National standards for energy efficiency in buildings, energy audits and energy management established. This will be done through a survey of successful energy audit schemes used in other countries, development and design of certification and training scheme for energy audits.
- Number of energy audits and feasibility studies increased. Audits allow users to estimate the potential for energy efficiency improvements and understand the measures to be taken. Energy audits are highly cost effective and some times offered for free by service providers. The project will increase the number of audits through the creation of local capacities at the demand (building owners, administrators) and the offer side (ESCOS and EE specialists).
- Appliance and installation guidelines for key (HVAC) products available at sale points. Partnership with private manufactures of HVAC equipment or large distributors for the development and distribution of product's guidelines.

Outcome 3:

Building engineers, architects, compliance officers, suppliers, universities and public are convinced of importance and market opportunities for building energy efficiency and saving and their capacities enhanced

- Local capacities on energy efficiency of building engineers, architects, compliance officers, policy makers, financial sector, universities and suppliers enhanced, (at least 75 professionals will be trained).
- Information on costs and benefits of demand side management (DSM) and building energy efficiency understood by service suppliers and policy makers.
- Awareness of building energy saving opportunities improved.

This outcome will focus on targeted training events that will include courses on energy management in buildings, monitoring the performance contracts, how to implement a performance contract, air conditioning system management identification and formulation of projects, and awareness creation activities.

Outcome 4:

Monitoring and evaluation

- Monitoring and evaluation work plan implemented
- Lessons learned collected, prepared and disseminated

With the GEF support for the implementation of the CO-EFFICIENCY project, Colombia will develop the necessary institutional, regulatory and legal structure that will allow private and public building owners to invest in EE measures with the support of qualified technicians. The 3.5 to 1 ratio of investment from the private sector and the government demonstrates a strong commitment to the objectives of the project.

F. INDICATE RISKS, INCLUDING CLIMATE CHANGE RISKS, THAT MIGHT PREVENT THE PROJECT OBJECTIVE(S) FROM BEING ACHIEVED, AND IF POSSIBLE INCLUDING RISK MEASURES THAT WILL BE TAKEN:

Risks	Likelihood	Remedial actions
1. Lack of ongoing, long term political and government support for building energy efficiency	Low	Government commitments in this area have been confirmed through the National Energy Plan 2006-2015 and the Energy Efficiency Law 697-01.
2. Withdrawal of baseline funding	Low	Funding has been secured from the MLF of the Montreal Protocol and both the Government and the private sector are committed to energy efficiency.
3. Inadequate project implementation	Low	Careful selection of project team members is required and a clear M&E plan based on UNDP's guidelines will have to be established.
4. Project failing to lead to implementation and follow up investments	Low	Energy efficiency projects are highly cost-effective, once the technical capacities will be developed (including those of the financial institutions), the legal and regulatory framework established, pilot projects on chillers implemented and market barriers removed, there should not be problems for the market to continue expanding.

G. DESCRIBE, IF POSSIBLE, THE EXPECTED COST-EFFECTIVENESS OF THE PROJECT

For a GEF expenditure of US\$ 1,000,000 an estimated 306,000 tons of CO₂ will be reduced over 20 years with an estimated cost per ton of CO₂ of US\$ 3.

H. JUSTIFY THE COMPARATIVE ADVANTAGE OF GEF AGENCY:

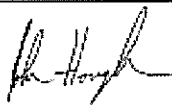
The project is a Capacity Building/ Technical Assistance intervention that falls within the comparative advantage of UNDP for GEF projects.

PART III: APPROVAL/ENDORSEMENT BY GEF OPERATIONAL FOCAL POINT(S) AND GEF AGENCY (IES)

A. RECORD OF ENDORSEMENT OF GEF OPERATIONAL FOCAL POINT (S) ON BEHALF OF THE GOVERNMENT(S):
(Please attach the country endorsement letter(s) or regional endorsement letter(s) with this template).

Claudia Patricia Mora Vice Minister of Environment Colombia	Date: 30 th August 2007
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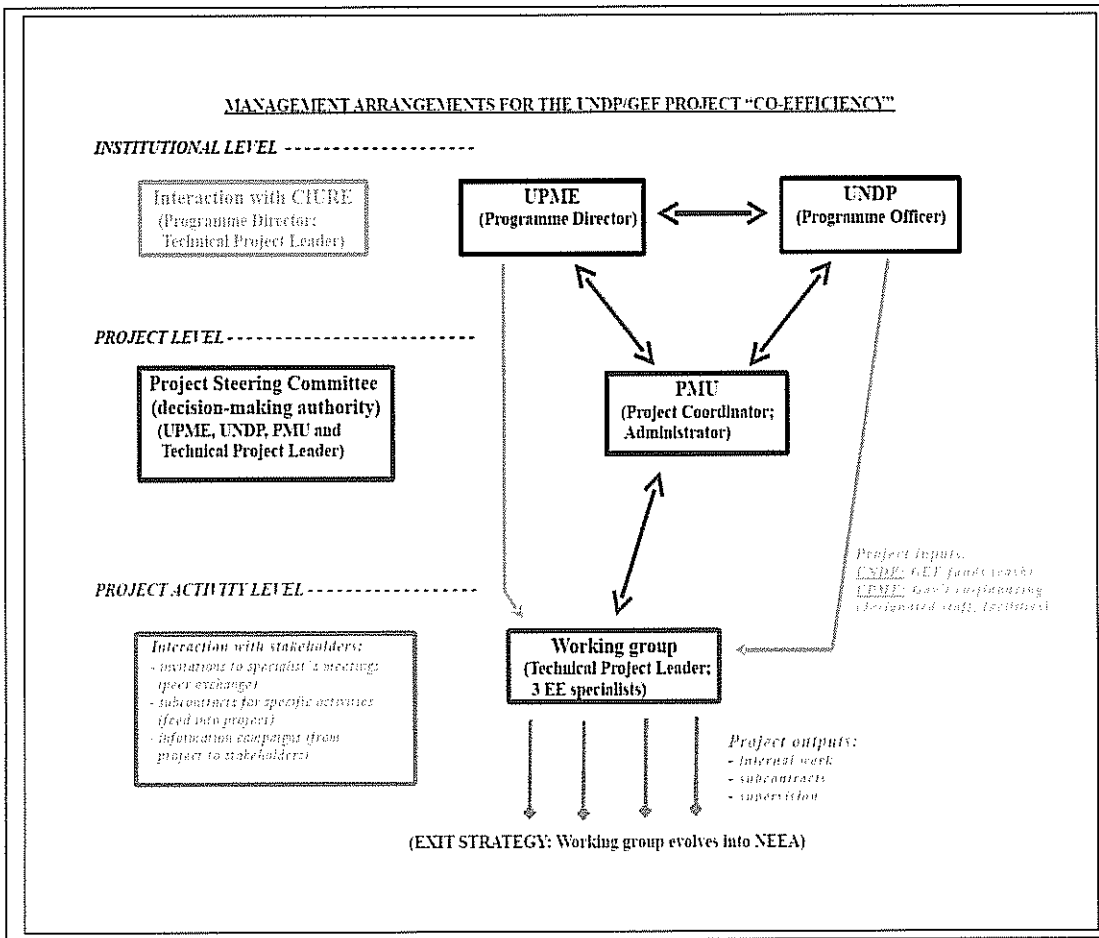
B. GEF AGENCY (IES) CERTIFICATION

This request has been prepared in accordance with GEF policies and procedures and meets the GEF criteria for project identification and preparation.	
 John Hough Deputy Executive Coordinator a.i. UNDP/GEF Date: 17 January 2008	Diego Masera Regional Technical Advisor LAC Regional Coordination Unit Project Contact Person Tel.: (507) 302-4594; diego.masera@undp.org

PART II: Other Agreements

Letter of Endorsement and Co-financing Letters are attached in a separate document.

PART III: Organigram of Project



PART IV: Terms of References for key project staff and main sub-contracts

The Project Coordinator will be responsible for the management, planning and coordination of the project activities. He/she will provide supervision of project implementation and be the key contact person for the project. He/she will be responsible for preparing communication with UNDP CO and the host institute (MME-UPME), Project Steering Committee and co-funders. In coordination with UNDP CO, he/she will undertake yearly operational planning, provide guidance on day-to-day implementation and be responsible for the effective and efficient implementation of the project activities in compliance with the overall Project objectives. Further key responsibilities include supervising the team allocated to the project from the relevant Government institutions; prepare Terms of Reference for consultants and contractors hired for specific technical assignments, ensure consistency between the various project elements and activities provided or funded by other donor organizations; develop reports on project progress on the project for Steering Committee and technical meetings. He/she shall report to the Project Director. This is a full-time position for the duration of the project. (Note: Available GEF resources cover only 42 project weeks; after which this position will be financed by the Government of Colombia).

The Project Administrator will be the responsible for the financial and administrative activities of the Project and the tracking and disbursement of project funds in compliance with UNDP rules and procedures. Key tasks include financial aspects of acquisitions, contracts, recruitment and project events once approved by the Project Steering Committee (or delegated to UNDP and the Project Coordinator). Other activities include assistance to the Coordinator to maintain day-to-day correspondence with counterparts, UNDP and UPME, management of a proper project administration, facilitation of externals visiting the project, preparation of invitations for assignments (special services and bidding procedures), preparation of financial information as input for periodic reporting and M&E (including independent evaluations), preparation of payments on request of UNDP-CO; and recommendations for the best usage of resources and execution of budgets. He/she will report to the Project Coordinator. This is a part-time position (3 days per week during 3 years, financed from GEF budget).

PART V: Baseline and Emission Reduction Calculations

The following table (based on the GEF Manual, page 3) summarizes the methodology used:

Type of GHG emission reduction	Direct (A)	Indirect (B, C)	
Example component of a GEF intervention that can cause this type of GHG emission reduction	investment in at least 13 chillers to replace energy inefficient, CFC-based centrifugal chillers	replication due to demonstration of technical and financial feasibility	market transformation
Log frame (SRF) level	outcome/output #4	short-term impact (1-5 years)	medium-term impact (5-10 years)
Quantification method	project evaluation (CDM-like)	based on project evaluation and replication factor (RF=2)	top-bottom approach based on technical and economic EE potential in building sector
Quality of Assessment	based on verifiable technical project parameters (error range within (30%))	based on verifiable project parameters; experiences can be used to assess applicable proxy for replication factor.	based on: (i) assumption that demand for EE in building sector is accelerated with 3 years; (ii) down-scaling of technical EE potential; (iii) assumed GEF causality factor level 2 (40%); resulting figures are indicative for order of achievements.

Direct benefits associated with the investment for the replacement of 13 HVAC chillers;

Indirect benefits: (i) due to replication of the replacement of chillers (demonstration effect); and (ii) associated to the contribution of the Project to a market transformation as a result of the long-term impact of the creation of the NEEA.

A. Direct GHG benefits

The direct benefits of the Project derive from the investment for the replacement of 13 large chillers under this MSP. The “Demonstration project for integrated management of the centrifugal chiller sub-sector in Colombia” presented by UTO/MVADT to the MLF (Montreal Protocol) has made a survey of large CFC-based chillers installations in Colombia. From 58 installations, representing the priorities of the Government of Colombia in terms of ownership and end-use profiles, a sample of 13 chillers will be selected for replacement demonstration under a competitive, transparent selection mechanism. There are four categories of end-use buildings: private buildings (offices) and hotels, public (government) offices and public hospitals.

While the average CO₂-intensity of grid-electricity in Colombia is 0.22 kg CO₂/kWh, here an estimated marginal value is used of 0.70 kg CO₂/kWh (gas/coal mix), following the instructions in the GEF Manual. The cost of electricity for all categories of end-users is US\$ 0.08 per kWh.

The key figures for an average chiller installation are:

Average age: 15-40 (years)
 Cooling capacity: 304 (TR)
 Operating hours: 3,103 (hours)

Existing CFC-based HVAC equipment:

Energy efficiency: 1.10 (kW/TR)
 Electricity consumption: 1,036,498 (kWh/yr)
 Annual electricity cost: 82,920 (US\$/yr)

Replacement by EE HVAC equipment:

Energy efficiency:	0.56 (kW/TR)
Electricity consumption:	527,672 (kWh/yr)
Annual electricity cost:	42,214 (US\$/yr)

Savings:

Electricity savings:	508,826 (kWh/yr)
Annual electricity cost:	40,706 (US\$)
Avoided CO ₂ -emissions:	356.2 (tons CO ₂ /yr)

Savings over lifetime:

Economic lifetime:	20 (years)
Electricity savings:	10,176,528 (kWh)
Electricity cost savings:	814,122 (US\$)
Avoided CO ₂ -emissions:	7,124 (tons CO ₂ /yr)

The GEF CO-Efficiency intervention will facilitate the direct investment in at least 13 HVAC chillers. The associated GHG benefits are calculated assuming a baseline shift of 33% over the lifetime of the investment (20 years) as per GEF guidelines, i.e. an effective acceleration of the replacement of 13.4 years.

- Total direct CO₂ savings: 13.4 years x 356 tons x 13 chillers = **62,000 tons CO₂**.
- Total direct energy savings: 13.4 x 508,826 x 13 = 88,637,489 kWh (i.e. **88,600 MWh**)

B. Indirect GHG benefits from replication

The indirect GHG benefits from replication follow directly from the calculated direct benefits. Under the assumption that a replication factor RF = 2 can be used, the following figures are obtained:

- Total indirect CO₂ savings from replication: 124,000 tons CO₂.
- Total indirect energy savings from replication: 177,200,000 kWh (i.e. 177,200 MWh)

C. Indirect GHG benefits from market transformation

The indirect GHG benefits from the Project are associated with the contribution of the Project to a market transformation towards the implementation of a range of EE technologies in the building sector, as a result of the medium-term impact of the existence of a national EE agency (NEEA). These benefits will be evaluated using a top-bottom approach. Under the PPG, UPME and the national consultant have elaborated available data on EE technologies in the building sector in Colombia.³¹ The data are based on studies, surveys and measurements in-situ for sub-sectors (commercial, residential and government buildings) in the cities of Bogota, Medellin, Baranquilla and Pasto.

Energy use in buildings in Colombia depends on the local climate, which is classified in temperature levels (“pisos”). They range from “cold” (piso 1) to “temperate” (piso 2) and “hot” (piso 3). The cities investigated cover about 1/3 of the total urban population in Colombia and are representative for the several climate levels,

³¹ Based on the reports: “*Determinación del Consumo Final de Energía en los Sectores Residencia Urbano y Comercial y Determinación de Consumos para Equipos Domésticos de Energía Eléctrica y Gas*” (June 2006) and “*Caracterización del Consumo de Energía Final en los Sectores Terciario, Grandes Establecimientos Comerciales, Centros Comerciales y Determinación de Consumos para sus Respectivos Equipos de Uso de Energía Final*” (April 2007), by the National University of Colombia and UPME.

hence reliable estimates can be obtained for the whole territory by extrapolation of these data. Colombia is highly urbanized and formal buildings are concentrated in the cities.

The large majority of (both existing and new) buildings is concentrated in the *pisos* 1 and 2; therefore, *piso* 3 will be ignored in the following. The following five electricity-based EE technologies have been identified: lighting, refrigerators, electric motors, others (washing machines, electric heaters, specialized equipment), and air conditioners. The estimated savings in end-use energy (delivered grid electricity) per technology are presented in the following table and refer to the electricity savings for the whole of (urban) Colombia.

	<i>piso 1</i>		<i>piso 2</i>	
	GWh/yr	share	GWh/yr	share
Lighting	1,500	13%	600	24%
Refrigeration	5,200	61%	850	34%
Motive power	350	4%	90	4%
Other	2,000	22%	190	8%
Air-conditioning	0	0%	750	30%
Total	9,050		2,330	
Total (<i>piso</i> 1 and 2)				11,380 GWh/yr

'*Piso 1*' accounts for the larger share of energy savings (as most cities are located in this climate level) and refrigeration represents the most important potential. In *piso* 2, air-conditioning is a major EE option. This total (technical) energy savings potential of 11,380 GWh/yr must be viewed in relation to the total electricity demand in Colombia. (54,855 GWh in 2006), hence it is roughly 20%.

In order to calculate the indirect GHG benefits of this UNDP/GEF intervention, we assume that under the present market conditions, the introduction of EE technologies will not be substantial. We further assume (conservatively), that investments in equipment in the near future (5-10 year time horizon), will be accelerated by 2 years³². We further assume that 15% of the technical potential will effectively take place, since: (i) not all prospected new construction will materialize; (ii) not all owners/users will prove responsive to EE promotion campaigns. Although electricity demand in Colombia increases at approx. 4% per year, under the given assumptions we can ignore a possible baseline shift.

We estimate a commercial potential of $15\% \times 11,380 \text{ GWh/yr} = 1,707 \text{ GWh/yr}$.

Different to the suggestion in the GEF guidelines, we will offset this savings potential to the average (and not the marginal) CO₂-intensity of grid-electricity in Colombia, which is 0.22 kg CO₂/kWh (hence 0.22 kton CO₂/GWh). Assuming a GEF causality factor of 40% (level 2, "modest and substantial"), we calculate the CO₂-savings obtained due to accelerating a market transformation by 2 years:

- Total indirect CO₂-savings: $40\% \times 2 \times 1,707 \times 0.22 \text{ kton CO}_2 = 300 \text{ ktons CO}_2$ (i.e. **300,000 tons CO₂**)
- Total indirect savings electric energy: $40\% \times 2 \times 1,707 = 1,370 \text{ GWh}$ (i.e. 1,370,000 MWh)

The commercial value of the energy saved is: $1,370,000 \text{ MWh} \times 80 \text{ US\$} = \text{US\$ } 109 \text{ million}$.

³² This assumption is directly based on the creation of the NEEA under the project, after which the introduction of EE technologies can be effectively promoted and enforced.

In order to avoid double-counting of GHG benefits with the UNDP/GEF proposal “Standards & Labels”³³, it is proposed to share these benefits among both project at a 50%-50% base, hence the indirect CO₂-savings due to market transformation for the CO-Efficiency project would be approx. 150,000 tons CO₂e.

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PART VI: List of identified chiller installations

The following table gives a list of large chillers identified by MVADT/UTO as of 2003.

NOMBRE DE LA EMPRESA	CONTACTO	DIRECCION	TELEFONO	CIUDAD	CANTIDAD EQUIPOS	TONELADAS DE REFRIGERACION	REFRIGERANTE	CARGA Kgs
LISTA RELEVAMIENTO 2002								
BANCO DE LA REPUBLICA	HERNAN ORJUELA	CARRERA 46 # 45-39	(5) 341 2172	BARRANQUILLA	2	460.0	R-11	681.82
BANCO DE LA REPUBLICA	HERNAN ORJUELA	CARRERA 4 # 7-14	(2) 883 4353 - 8832833	CALI	1	250.0	R-11	536.36
BBVA BANCO GANADERO	CARLOS EDUARDO GOMEZ	CARRERA 43 A # 1S-31 PISO 8	(4) 268 2700 - 2683468	MEDELLIN	1	220.0	R-11	227.27
CENTRO DE CONVENCIONES	CECIL SOSA	GETSEMANI CARRERA 8	(5) 664 3580	CARTAGENA	3	825.0	R-11	907.27
CENTRO INTERNACIONAL DE AGRICULTURA TROPICAL	MAURICIO ROJAS	KILOMETRO 17 RECTA CALI-PALMIRA	(2) 4450000 - 8895435 - 2717100 - 6603968	PALMIRA	1	280.0	R-11	204.55
DIVISION DE IMPUESTOS Y ADUANAS NACIONALES	HERNAN DARIO GIL	CARRERA 52 42-43 PISO 3 OFICINA 304	(4) 381 1313 - 3810541	MEDELLIN	1	220.0	R-11	154.55
EDIFICIO BANCO DEL COMERCIO				CALI	3	633.0	R-12	0
EDIFICIO DEL CAFE				MEDELLIN	2	700.0	R-12	0
EDIFICIO VICENTE URIBE RENDON	FERNANDO LOPEZ	CARRERA 46 # 52-28	(4) 251 5378	MEDELLIN	2	440.0	R-11	909.09
EMPRESAS DEPARTAMENTALES DE ANTIOQUIA		CALLE 41 # 52-28	(4) 381 1067	MEDELLIN	1	294.0	R-12	294.55
ENKA DE COLOMBIA	CARLOS CABALLERO	GIRARDOTA	(4) 405 5055 - 4055389 - 4055219	MEDELLIN	2	1,440.0	R-11	0
EXITO - SAN ANTONIO	CARLOS POLANIA	CALLE 48 # 46-115	(4) 339 5252	MEDELLIN	2	320.0	R-12	0
FEDERALTEX		KILOMETRO 7 VIA A LA PAZ	571 6101 - 5717052	VALLEDUPAR	2	800.0	R-11	663.64
FEDERALTEX		KILOMETRO 7 VIA A LA PAZ	571 6101 - 5717052	VALLEDUPAR	2	610.0	R-11	681.82
GOBERNACION DE ANTIOQUIA		CALLE 42 # 52-186	(4) 239 3254	MEDELLIN	2	746.0	R-11	790.91
GOBERNACION DEL VALLE	JAIRO ISAZA	CARRERA 6 CALLES 9-10	(2) 886 0000 - 8200000 - 8860054	CALI	1	180.0	R-11	0
HIDROELECTRICA EL GUAVIO	ALIRIO FUENTES	CARRERA 9 # 73-44 PISOS 5-6	(1) 261 6800	BOGOTA	3	1,500.0	R-11	1595.45
HIDROELECTRICA SAN CARLOS	OMAR DARIO RENGIFO	CARRERA 43A # 11A-80	(4) 317 2000	MEDELLIN	2	640.0	R-11	772.73
HIDROELECTRICA SAN CARLOS	OMAR DARIO RENGIFO	CARRERA 43A # 11A-80	(4) 317 2000	MEDELLIN	2	700.0	R-11	1000
HIDROELECTRICA JAGUAS	OMAR DARIO RENGIFO	CARRERA 43A # 11A-80	(4) 317 2000	MEDELLIN	2	300.0	R-11	500
HOTEL HILTON	JUAN CASADIEGO	AVENIDA ALMIRANTE BRION, EL LAGUITO	(5) 665 0666	CARTAGENA	2	700.0	R-11	736.36
HOTEL INTERCONTINENTAL	CARLOS VELEZ	CALLE 16 # 28-51 VARIANTE LAS PALMAS	(4) 266 0680	MEDELLIN	1	235.0	R-11	277.27

NOMBRE DE LA EMPRESA		CONTACTO	DIRECCION	TELEFONO	CIUDAD	CANTIDAD EQUIPOS	TONELADAS DE REFRIGERACION	REFRIGERANTE	CARGA Kgs
HOTEL INTERCONTINENTAL		CARLOS VELEZ	CALLE 16 # 28-51 VARIANTE LAS PALMAS	(4) 266 0680	MEDELLIN	1	230.0	R-11	265.91
INTERQUIM S.A.		NOE FRANCO	CALLE 10 SUR # 50F-28 OFICINA 402	(4) 289 0533	MEDELLIN	1	180.0	R-11	163.64
ISA - EL POBLADO ISS			CALLE 12 SUR # 18-168	(4) 325 2270	MEDELLIN	2	440.0	R-11	309.09
TEATRO AMIRA DE LA ROSA		MANUEL EQUIS			CUCUTA	1	250.0	R-11	350
TEATRO AMIRA DE LA ROSA		MANUEL EQUIS			BARRANQUILLA	1	0.0	R-11	0
TEXPINAL S.A.		JOSE DOMINGO GUZMAN	KILOMETRO 2 VIA ESPINAL-GIRARDOT	(8) 248 4222	ESPINAL	1	420.0	R-11	318.18
TEXPINAL S.A.		JOSE DOMINGO GUZMAN	KILOMETRO 2 VIA ESPINAL-GIRARDOT	(8) 248 4222	ESPINAL	1	380.0	R-11	395.45
TEXPINAL S.A.		JOSE DOMINGO GUZMAN	KILOMETRO 2 VIA ESPINAL-GIRARDOT	(8) 248 4222	ESPINAL	1	246.0	R-11	306.82
TEXPINAL S.A.		JOSE DOMINGO GUZMAN	KILOMETRO 2 VIA ESPINAL-GIRARDOT	(8) 248 4222	ESPINAL	1	221.0	R-11	295.45
UNIVERSIDAD DE ANTIOQUIA		AQUILEO VEGA	CALLE 67 # 53-108	(4) 210 5270 - 2630011	MEDELLIN	2	620.0	R-11	572.73
VANYLON S.A.		ARISF ESLAIT	CALLE 79 # 73-180	(5) 353 0190	BARRANQUILLA	3	1,050.0	R-12	981.82
VANYLON S.A.		ARISF ESLAIT	CALLE 79 # 73-180	(5) 353 0190	BARRANQUILLA	1	350.0	R-12	327.27
VANYLON S.A.		ARISF ESLAIT	CALLE 79 # 73-180	(5) 353 0190	BARRANQUILLA	1	350.0	R-12	327.27
VANYLON S.A.		ARISF ESLAIT	CALLE 79 # 73-180	(5) 353 0190	BARRANQUILLA	1	400.0	R-12	327.27
TOTALES						58	17,630.00		16,074.54

LISTA RELEVAMIENTO 2003

Colombina S.A	Carlos Rojas	La Paila - Valle	(2) 2205040	Cali	2	110	R-12	150	
Compania Nacional de Chocolates	Alfredo Morales	KILOMETRO 2 VIA Bello - Rionegro	(4) 5311155	Rionegro	2	150	R-12	180	
Club Miramar Ecopetrol	Jonas Barrios	Planta Ecopetrol Barrancabermeja	N/D	Barrancabermeja	2	100	R-11	90	
TOTALES						6	360		420

SIGNATURE PAGE

Country: Colombia

UNDAF Outcome(s)/Indicator(s):

National capacities strengthened in order to develop competitive and sustainable development that takes into consideration regional particularities and comparative advantages.

Expected Outcome(s)/Indicator (s):

Public institutions and civil society organizations strengthened to formulate and implement programs and initiatives of environmental management that warranty the provision and conservation of environmental services with emphasis in processes of conservation, restoration and sustainable use of ecosystems, provision and rations and efficient use of energy and water integrated management.

Expected Output(s)/Indicator(s):

Government and private sector with strengthened capacities to design strategies, programmes and projects that promotes energy efficiency and entrepreneurial efficacy.

Indicator: 1 Priority initiative or Project for the provision, rational and efficient use of energy formulated, co-financed and accompanied in the implementation.

Implementing partner:

Unidad de Planeación Minero Energética (UPME),
Ministerio de Energías y Minas de Colombia
(designated institution/Executing agency)

Other Partners:

Programme Period: 2009-2012
Programme Component: Poverty and sustainable development
Project Title: **Co-Efficiency; Improving Energy Efficiency in Buildings in Colombia**
Project ID: 000
Project Duration: 3 Years
Management Arrangement: NEX

Total budget:	\$5,420,000
Allocated resources:	
Government	\$965,000 (In-kind)
UNDP	\$150,000 (In-kind)
Other:	
GEF:	<u>\$975,000</u>
Private Sector:	<u>\$2,330,000</u>
MLF:	<u>\$1,000,000</u>

Agreed by (Government): _____

Agreed by (Implementing partner/Executing agency): _____

Agreed by (UNDP): _____



1

LISTA DE CHEQUEO PARA FIRMA DE PRODOCS /REVISIONES

PROGRAMA

DATOS GENERALES

FECHA _____

NUMERO DEL PROYECTO _____

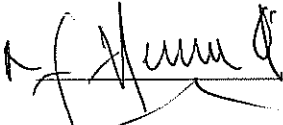

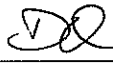
NOMBRE DEL PROYECTO _____

REVISIÓN ANTERIOR:

REVISIÓN ACTUAL:

PRODOC NUEVO: FECHA PREPAC _____ FECHA PAC _____

FIRMAS

	NOMBRE	FIRMA	FECHA
OFICIAL DE PROGRAMA	_____		Nov 2
FINANZAS	_____		Nov 3
ARR (UAP) (solo si el proyecto tiene un componente alto de adquisiciones)	_____		Nov 4
ARR (P)	_____	_____	_____

OBSERVACIONES

	NOMBRE	FIRMA	FECHA
ENVIO A LA SEDE :	_____	_____	_____
(solo si se trata de nuevo PRODOC o Rev. Sustantiva)			