

**United Nations Environment Programme
UNEP**

**Terminal Evaluation of the UNEP Project
“Promoting Industrial Energy Efficiency through a Cleaner
Production/Environmental Management System Framework”.**

Project No: GEF/4020-01-04

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Acknowledgement

I would like to acknowledge the contribution of numerous project stakeholders and evaluation respondents who received the evaluation mandate as an exercise to freely input their views and provide information in order to create an 'Objective Report' that could serve as a 'Learning Resource' for future projects in the area of Energy Efficiency (EE) and Cleaner Production (CP) framework in project participating countries: Hungary , Slovak Republic, Czech Republic, India, China and Vietnam and many other countries across the world. The evaluation exercise would not have been completed without their proactive support, assistance and value addition.

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All efforts have been made to make the evaluation as 'Objective' as possible. Some 'Subjectivity' however, is inherent in the process of evaluation. The responsibility for unintended adverse observations thus rests with me.

Dr. Naval Karrir

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Abbreviations

CO ₂	Carbon dioxide
CP-EMS	Cleaner Production-Environmental Management System
CPCs	Cleaner Production Centres
EE	Energy Efficiency
ESCOs	Energy Service Companies
GEF	Global Environment Facility
GHG	Green House Gases
MOU	Memorandum of Understanding
M&E	Monitoring and Evaluation
NCPCs	National Cleaner Production Centres
PIR	Project Implementation Review
SMEs	Small and Medium Enterprises
TOR	Terms of Reference
UNEP	United Nations Environment Programme
UNEP-DTIE	Division of Technology, Industry and Economics of UNEP
UNIDO	United Nations Industrial Development Organization

Executive Summary

The Global Environment Facility (GEF) sponsored the project, titled: Promoting Industrial Energy Efficiency through a Cleaner Production-Environmental Management System (CP-EMS) framework with an objective to reduce emission of Green House Gases (GHGs) in Small & Medium Enterprises (SMEs) in six countries - China, India, Vietnam, Czech Republic, Hungary and Slovak Republic.

The project was managed and executed by: United Nations Environment Protection-Division of Technology, Industry and Economics (UNEP-DTIE) together with the National Cleaner Production Centres/Cleaner Production Centres (NCPCs/CPCs) operation in the aforementioned six countries.

The envisaged project duration of 20 months starting in February 2002 was revised to be completed in June 2007.

At the beginning of the project, all six project participating countries had existing NCPCs, established with government support and operating under a UNEP/UNIDO (United Nations Industrial Development Organization) framework.

The expected outcome from the project was to integrate Energy Efficiency concepts into CP (Cleaner Production) approaches and train/develop CP professionals working in the existing UNEP/UNIDO network of NCPCs.

Cost of the Project

US\$ 2,715,000 (break up provided below- as per project document)

	US\$	%
1. Cost to the GEF Trust Fund	950,000	35.0
2. Co-financing (in-kind):		
UNEP	175,000	6.4
NCPCs	600,000	22.1
Industry	990,000	36.5

Terminal Evaluation of the Project

The Terminal Evaluation of the project was carried out during the period November 1, 2007 to February 2, 2008, for a total duration of 40 days using a participatory approach whereby the UNEP/DTIE Project Coordinator & NCPCs were kept informed and regularly consulted throughout the evaluation.

The objectives of the terminal evaluation were to:

- Determine the extent to which the project objectives have been achieved;
- Assess if the project has led to any positive or negative consequences; and
- Assess project performance (implementation of planned project activities and outputs against actual results).

The limitation of the Terminal Evaluation included:

- The evaluation was limited due to resource constraints on evaluation time & budgets.

2. There were serious constraints in terms of the information made available on project design and implementation.

Hence, the evaluation report needs to be considered in light of the above-mentioned constraints.

Project Performance

- The project has led to positive consequences in terms of integrating the Energy Efficiency (EE) and Cleaner Production (CP) practices in the SMEs, leading to reduction in the emission of green house gases in all the six project participating countries (i.e., Hungary, Slovak Republic, Czech Republic, India, Vietnam and China).
- The project's main objective of reducing the emission of carbon dioxide by 225,000 tons/year by improving energy management practices and identifying investments in SMEs through a structured approach has been achieved to an extent that, to date, 219,000 tons/year CO₂ equivalent emission reduction have been reported by UNEP-DTIE from the measures undertaken by the participating SME units based on the implementation of the CP-EMS audit recommendations.
- Against the planned target of 90 audits to be conducted by participating NCPCs, the project has been able to conduct 87 audits.
- With regards to the number of proposals prepared and submitted to financing institutions the target was 90 proposals. However, the desk review of the audit reports and the feedback received from SME units (visited during evaluation mission) has revealed that the audit recommendations were in the areas of: good house keeping measures, process control, equipment modifications, equipment & material change and recycle & reuse. The recommendations were either low cost or no cost measures for which the financing was done in-house by the SMEs without submitting proposals to the financial institutions.
- All the six participating NCPCs successfully translated and adapted the Energy Audit Manual available in English to the national conditions/languages.
- The project targeted training 18 persons across six NCPCs to become capable of managing/conducting energy efficiency audits in industry as part of a Cleaner Production/EMS program. The project far exceeded the target by making 126 persons across six NCPCs, capable of managing/conducting energy efficiency audits in the industry. Further capacities were developed among NCPC personnel to use GHG indicator software available in the public domain.
- As part of the project objectives, awareness has been created amongst professionals in the global network of NCPCs and other in-country stakeholders (e.g., Energy Managers Associations and Business Councils) on methods for providing energy management services.

Conclusions

Based on the discussions with various stakeholders during the evaluation, it has been observed that the project has been able to create awareness and build capacities on the EE-CP integration amongst them.

Furthermore, as per the information provided by UNEP-DTIE, it can be concluded that the project has succeeded in meeting its objective to reduce emission of Green House Gases

(GHGs) by identifying and implementing Energy Efficiency (EE) improvements as an integral part of CP-EM audits in Small & Medium Enterprises (SMEs) in six countries.

There have been revisions in the timelines and budgets allocations. However, despite all the revisions the total cost of the project to the GEF Trust Funds and co-financing has remained unchanged.

Considering the foresaid and the fact that the project was in SMEs in six different countries across two continents the overall rating of the project is evaluated as 'Satisfactory'.

1. Project Background and Overview

The Global Environment Facility (GEF) within its focal area of Climate Change (CC) and Operational Program (OP 5-Removal of barriers to energy efficiency), sponsored the project, titled: Promoting Industrial Energy Efficiency through a Cleaner Production-Environmental Management System (CP-EMS) framework, in six countries: China, India, Vietnam, Czech Republic, Hungary and Slovak Republic.

The **overall goal of the project** was to reduce emission of Green House Gases (GHGs) by identifying and implementing Energy Efficiency (EE) improvement as an integral part of CP-EMS audits in Small & Medium Enterprises (SMEs) in six countries.

The project **Management & Executing Agencies** were: United Nations Environment Programme - Division of Technology, Industry and Economics (UNEP-DTIE) together with the National Cleaner Production Centres/Cleaner Production Centres (NCPCs/CPCs) operation in the aforementioned six countries, and referred in this terminal evaluation report as NCPCs.

The project complemented well with other GEF efforts in the six countries, including Energy Conservation & Pollution Control in Township and Village Enterprise Industries (China); Energy Efficiency Co-Financing Program (Hungary); Efficient Industrial Boilers (China); China Energy Conservation Project (China); Efficient Lighting Initiative (Czech Republic and Hungary); and Energy Efficiency (India).

The envisaged project duration was 20 months starting in February 2002, which was later revised and extended to be completed in June 2007, making the total project duration of 63 months. Six project revisions were undertaken during the project period, details on the revisions and the reasons therein included in the subsequent sections.

Before the start of the project, all the six project participating countries had realized the need for improving industrial energy efficiency in their national environmental policies and programs.

- The Czech Republic addressed the need to improve energy efficiency through a Governmental Decree 252 (1991) and mentioned the importance of energy conservation explicitly in its State Environment Policy.
- The Slovak Republic revised its National Energy Policy in 1999; the policy recommended “optimization of state support to rationalization of energy use and minimization of energy consumption”.
- India had since mid-1970s’ emphasized the need to improve industrial energy efficiency and started a number of government programs that supported investments in energy efficiency improvements and cleaner production. Organizations like National Productivity Council (NPC) and Petroleum Conservation Research Association (PCRA) were mandated to create awareness about the need and salience of energy efficiency and cleaner production in the industrial sector.
- China established a National Energy Conservation Information Centre and started investigating how enterprises interested in environmental management system certification (particularly ISO14001) could be linked to energy conservation.

- Hungary and Vietnam similarly made energy efficiency in industrial sector a national priority.

At the beginning of the project, all six project participating countries had existing National Cleaner Production Centres (NCPCs) established with government support and operating under a UNEP/UNIDO (United Nations Industrial Development Organization) framework.

Currently, in China the National Cleaner Production Centre (NCPC) is attached to the State Environmental Protection Agency (SEPA), while India's centre is supported institutionally by the National Productivity Council (NPC), a semi-autonomous body affiliated with the Ministry of Industry, well known for its expertise in energy management. The Vietnamese Cleaner Production Centre is supported by the Ministry of Planning & Investment and the Ministry of Science, Technology & Environment, while the Deputy Minister of Industry and Environment sits on the Czech Centre's Steering Committee to ensure coordination with Government policies and programs.

In Slovakia, the Cleaner Production Centre is constituted as an NGO, but has government officials on its Steering Committee. The Hungarian Cleaner Production Centre has departmental status within the Department of Environmental Economics and Technology in the Faculty of Business Administration, Budapest University of Economic Science and Public Administration, Hungary which is a government institution.

The current project proposed to respond to specific needs of industry (as identified by NCPCs in their work) particularly the Small and Medium Enterprises (SMEs). Further, the project proposed to promote in industry a CP-EMS approach that could include fostering best energy management practices and investments that could reduce emissions of the Green House Gases (GHG).

The main **Components of the project (as per project document)** included:

- 1) Undertaking energy audits by the participating NCPCs in the industrial SMEs.
- 2) For each audit, development of at least one investment proposal for equipment with improved Energy Efficiency (EE).
- 3) Preparation of national versions of an energy audit manual from a CP-EMS perspective. The core Energy Audit (EA) manual had already been produced (in English) as a joint UNEP (United Nations Environment Protection)/UNIDO (United Nations Industrial Development Organization) activity.
- 4) Training of personnel in the six NCPCs capable of conducting energy audits as an integral part of a CP-EMS audit.
- 5) Increasing the awareness of personnel in the global network of NCPCs and other in-country stakeholders (e.g., Energy Management Associations and Business Councils) for opportunities that EMS can provide, if integrated into the NCPC business advisory practices and methods for doing so.

The Overall **Expected Outcome** from the project was: to integrate EE concepts into CP approaches and train/develop CP professionals working in the existing UNEP/UNIDO network of NCPCs.

As per the project document, the expected *direct outcomes of the project* included:

- an estimated annual reduction of 225,000 tons of CO₂ (carbon dioxide-a GHG) equivalent;
- at least 15 energy audits conducted by each of the six participating NCPCs (a total of 90 audits);
- developing financing proposals (an average of one proposal per audit: a total of 90 proposals) for medium-cost energy efficiency investments and assistance in negotiating with multilateral/bilateral as well as local financial institutions;
- national versions of the UNEP/UNIDO CP-Energy Audit manual that could specifically be integrated with the CP and EMS materials already being used by the six NCPCs. Particular attention to be given to the integration of information on procedures relating to (i) the environmental aspects of how energy is used in the various energy systems in SMEs and (ii) to include energy–environment links of energy systems or guidelines for selecting energy saving alternatives based on environment conservation aspects, into the manual;
- trained personnel in the six NCPCs capable of conducting an energy audit, either as stand alone activity or as part of CP-EMS audit; and
- personnel in the remaining NCPCs in the global network and other in-country stakeholders, such as Energy Managers Associations and Business Councils, to have increased awareness on the opportunities and methods for integrating EMS in their operations.

The expected *long-term project outputs* included:

- continued delivery of services by participating NCPCs to their private sector clients on CP-EMS advisory and training with an energy efficiency component;
- improved co-ordination and links between the NCPCs and on-going related project managers (such as existing ESCOs, Energy Manager Associations and Business Councils) on energy auditing;
- increased levels of identification and implementation of EE measures by the industrial enterprises and thus continued contribution to GHG emission reductions; and
- expansion of the approach to the other NCPCs and NCPC-like institutions operating in the UNEP/UNIDO Network.

Cost of the Project:

	US\$	%
1. Cost to the GEF Trust Fund	950,000	35.0
2. Co-financing (in-kind):		
UNEP	175,000	6.4
NCPCs	600,000	22.1
Industry	990,000	36.5
Total Cost	2,715,000	100.0

1.1 Baseline Conditions at the Beginning of the Project (as per project document)

SMEs are an important industrial segment in all developing countries, both in terms of their contribution to the national economy and in their share of industrial energy consumption. Most of the SMEs in the project participating countries use outdated

manufacturing technologies for example: Lancashire boilers for steam generation, winches and jiggers in textile processing, box type forging furnaces, and down draft kilns in the ceramic industry. Consequently, SMEs in the project countries tend to use far more energy per unit output than their counterparts in the developed countries.

Lack of information and skilled personnel are significant barriers for the SMEs to undertake energy efficiency measures on their own. A typical SME entrepreneur, saddled with the problem of too many functional pressures and too little time, finds it difficult to cope with the demands of different government agencies regarding energy, environment, safety, workers' health, and similar non-production issues. The result is often an aversion to change unless forced by regulation or some other external pressure.

Prevailing approaches to improving energy efficiency in SMEs have mostly been task oriented and prescriptive in nature, and have thus become external to the day-to-day business management. Quite often, an energy efficiency improvement program ends as soon as the energy efficiency advisor moves out of the factory. Consequently, energy efficiency programs have mostly remained sporadic and of short duration. Energy efficiency programs are mostly based on the economic attractiveness of reduced energy consumption. With declining energy prices this attraction has also declined. In a parallel, CP-EMS programs have been mainly environment-driven and generate little interest, where environmental issues are not sensitive or important.

Professionals with skills in the fields of energy efficiency and CP-EMS find themselves in separate compartments. Although the energy-environment linkage is well recognized, its complementary nature is rarely exploited. Integrating EE-CP-EMS would create an approach that is stronger than its parts.

In summary, combining energy efficiency with environmental management in a systematic manner would have greater appeal to industrial entrepreneurs and the managers in SMEs.

2. Terminal Evaluation of the Project

The Terminal Evaluation of the project was carried out during the period November 1, 2007 to February 2, 2008, for a total duration of 40 days that included 26 days of travel to the six project participating countries and 14 days of desk work.

The NCPCs in the project countries coordinated the project evaluation visits in the participating SMEs and organized the meetings with various project stakeholders. In India, China and Slovak Republic industrial visits could not be coordinated by the NCPCs and telephonic interviews were held. In Hungary, Czech Republic and Vietnam two industrial units each were visited to solicit feedback on the project implementation and recommendations for the future projects.

2.1. Objective and Scope of the Terminal Evaluation

The *objectives of the terminal evaluation* were to:

- Determine the extent to which the project objectives have been achieved;
- Assess if the project has led to any positive or negative consequences; and
- Assess project performance (implementation of planned project activities and outputs against actual results).

The evaluation has primarily focused on the following *main questions* (as per the *Terms of Reference {TOR}*):

- To what extent has the project improved the promotion of Green House Gases (GHG) emission reductions by removing barriers that prevent the integration of EE improvements and energy management practices with general environmental management approaches?
- To what extent has the project been able to build capacities and increase the implementation of energy efficiency initiatives in the SMEs?
- To what extent has the project been able to create a structured energy audit methodology and management approach consistent with related concepts such as EMS-CP?

In other words, the evaluation has assessed how effective was the development and application of an integrated energy-environment management approach through the CP-EMS route, which aimed at an overall improvement in the environmental performance of the enterprises.

2.2. Evaluation Methodology

An in-depth evaluation was conducted using a participatory approach whereby the UNEP/DTIE Project Coordinator & NCPCs were kept informed and regularly consulted throughout the evaluation.

The evaluation utilized the following *methodology*:

1. A *desk review* of project documents including:
 - (a) Energy Audit reports, project summaries, project revision reports, annual Project Implementation Reviews (PIRs) and relevant correspondence amongst various project stakeholders;
 - (b) Notes from the bilateral meetings between UNEP-DTIE & NCPCs, training/workshop proceedings and other correspondence related to the project with various stakeholders;
 - (c) The review of Energy Audit Manual developed and subsequently adapted by NCPCs to suit local conditions, CDROM and websites/portals created by NCPCs; and
 - (d) Other project material produced by the NCPCs (Example: case references and dissemination material on EE & CP activities).
2. Structured *Questionnaire* was used to solicit information from NCPCs (Please see Annex I for the questionnaire).
3. *Interviews* were held with the directors & staff of each participating NCPC in six participating countries.
4. *Interviews* with the officials of the Energy Branch UNEP-DTIE: Project Coordinator and Task Manager. Interviews (face to face, email and telephone) were held with various project stakeholders in the six project participating countries were held. The list of interviewees (including the directors & staff of each participating NCPC) is included in Annex II.
5. *Interviews* with Project Manager & Project Coordinator, UNEP were also held.
6. *Site visits* were undertaken to the six NCPCs in the participating countries.

2.3. Evaluation Principle & Parameters

The key evaluation principle followed for the assessment of this project (as per TOR) focused on the following questions: “what happened?” and “what would have happened anyway?” The key underlying consideration was the ‘Baseline conditions’ that existed before the project implementation in the project participating countries and how these baselines got changed with the project interventions.

The evaluation parameters followed the requirements of the TOR specified by UNEP Evaluation & Oversight Unit, for this assignment, (see **Annex III** for the TORs).

2.4. Limitations of the Evaluation Study

1. The evaluation was limited due to resource constraints on evaluation time & budgets.
2. There were serious constraints in terms of the information made available on project design and implementation.

Hence, the evaluation report needs to be considered in light of the above mentioned constraints.

3. Project Performance and Impact

As per the results planned under the Memorandum of Understanding (**MOU–I**) signed in March 2002, between UNEP–DTIE and NCPCs a total of 45 audits were planned and conducted: Vietnam (7), China (10), India (10), Hungary (7), Slovak Republic (7) and Czech Republic (4).

A summary of the results achieved (as per documents submitted by UNEP-DTIE) are provided in table 1 below. (For details see **Annex IV**). Please note that the information could not be verified during evaluation.

Table 1. Project Overall Achievements as per MOU-I

Countries (audits)	Vietnam (7)	China (10)	India (10)	Hungary (7)	Slovak (7)	Czech (4)	Totals
Total Savings from the implemented measures (USD/year)	1,714,525	831,609	2,916,068	130,111	94,095	23,400	5,709,808
Total Investment from the implemented measures (USD)	428,199	985,609	5,115,952	352,495	223,790	62,200	7,168,245
GHG Reduction from the Identified measures (ton/year)	29,558.92	30,655.10	114,389	1,716.8	6,532	341	183,192.82
GHG Reduction from the implemented measures (ton/year)	20,102.92	10,431.80	71,835.3	622.80	6564	341	109,897.82
No. of professionals trained in the NCPCs/ CPCs capable of conducting CP-EE audits.	8	4	40	2	5	3 (with additional external consultants)	62
No. of professionals trained in the NCPC/ CPC capable of using the GHG indicator software.	3	6	40	2	4	2	57

Source: UNEP-DTIE

As per the results planned under the **MOU–II** signed in June 2003, between UNEP-DTIE and NCPCs a total of 42 audits were planned: Vietnam (10), China (10), India (5), Hungary (7), Slovak Republic (10) and Czech Republic (0). There was a change of NCPC administration in Czech Republic which interrupted the continuation of the project in this country. The summary of the results achieved (as per documents submitted by UNEP-DTIE) are provided in table 2 below. For details please see **Annex V**. Please note that the information could not be verified during evaluation.

Table 2. Project Overall Achievements as per MOU-II

Countries (audits)	Vietnam (10)	China (10)	India (5)	Hungary (7)	Slovak (10)	Czech	Totals
Total Savings from the implemented measures (USD/year)	172,157	28,212,761	28,384,918	255,501	167,918	NIL	\$57,193,255
Total Investment from the implemented measures (USD)	111,877	6,199,756.00	6,311,633	1,708,700	1,584,730	NIL	\$15,916,696
GHG Reduction from the Identified measures (ton/year)	9,195.86	78,629.60	87,825.46	4,838	7,609	NIL	188097.920
GHG Reduction from the implemented measures (ton/year)	3,319.45	45,633	48,952.45	3,240	7,609	NIL	108753.900
No. of professionals in the NCPCs/ CPCs capable of conducting CP-EE audits.	8	9	40	2	5	NIL	64
No. of professionals in the NCPCs/ CPCs capable of using the GHG indicator software.	3	13	40	2	4	NIL	62

Source: UNEP-DTIE

3.1. Project Performance Evaluation

A. Project Performance

a) Integration of Energy Efficiency (EE) and Cleaner Production (CP) practices in the SMEs

- The project has led to positive *consequences* in terms of integrating the Energy Efficiency (EE) and Cleaner Production (CP) practices in the SMEs, leading to

reduction in the emission of green house gases in all the six project participating countries.

- The project's main objective of reducing the emission of carbon dioxide by 225,000 tons/year by improving energy management practices and identifying investments in SMEs through a structured approach has been achieved to an extent that, to date, 219,000 tons/year of CO₂ (Carbon dioxide) equivalent emission reduction have been reported by UNEP-DTIE, from the conducted audits and measures being undertaken. This is a good achievement considering the fact that the second MOU for conducting audits in Czech Republic SMEs was not signed as the new NCPC's mandate (established in early 2005) was mainly on dissemination of information on energy efficiency—cleaner production in generic terms without going into making specific recommendations based on audits in the units.
- Against the planned target of 90 audits to be conducted by participating NCPCs, the project has been able to conduct 87 audits.
- With regards to the number of proposals prepared and submitted to financing institutions the target was 90 proposals. However, the desk review of the audits reports and the feedback received from SME units (visited during the evaluation mission) has revealed that, the audit recommendations were in the areas of: good house keeping measures, process control, equipment modifications, equipment & material change and recycle & reuse. The recommendations were either low cost or no cost measures. The implementation of the recommendations was done by the units without approaching the financial institutions for loans. Formal financing proposals were either not prepared or submitted to financial institutions.

b) Capacity building activities

- The project targeted **training** 18 persons across six NCPCs to become capable of managing/conducting energy efficiency audits in industry as part of a Cleaner Production/EMS program. The project far exceeded the target by making 126 persons across six NCPCs capable of managing/conducting energy efficiency audits in the industry. Further capacities have been developed within the NCPCs enabling them to use GHG indicator software available in the public domain.
- The project trained the industries as well as the six NCPCs to carry-out CP-EMS audits. As part of the project, UNEP-DTIE and the National Productivity Council (NPC, India) organized and conducted in India in February 2002, a two-tier training program:
 - 1) A three day basic training for the NCPC directors, followed by
 - 2) An intensive two week training for two/three CP expert from each NCPC on issues related to CP-EMS.
- Furthermore, a project Intranet Site was created to submit the CP-EMS audits and share the related information and tools among project participating NCPCs during the duration of the project. This intranet site no longer exists as it was only meant to be a means of exchanging information and documents between project partners during the project implementation.
- The project also planned to create awareness amongst professionals belonging to the global NCPC network and other in-country stakeholders (e.g., Energy Management Associations and Business Councils) on methods for providing CP-EMS services. For

this purpose, a “Latin American Dissemination Meeting” for the UNEP-GEF Cleaner Production (CP)-Energy Efficiency (EE) project was conducted in Mexico, wherein 43 representatives from the global network of NCPCs attended and participated. The representatives came from the following countries: Argentina, Colombia, Brazil, Guatemala, Mexico, Nicaragua, Ecuador and Peru. In addition to the above, representatives from the six project participating NCPCs also participated in the same meeting.

- Furthermore, a 10 day "Cleaner Production and Energy Efficiency Training Program" was conducted for NCPCs from Africa and Latin America (in January 2005). The training included presentations, technical training exercises & real case studies using tools from the CP-EE manual. The training helped the participating Cleaner Production Centres, from Africa and Latin America, to learn about integration of energy efficiency concepts into CP approaches, and to include energy efficiency activities as a comprehensive part of their ongoing core programs and activities.
- Nine “Business Cases Brochures” containing information on EMS methods that can be used as case references in the UNEP Industry bulletins were published. These publications were based on the energy audit studies conducted in the SMEs and fostered the integration of CP-EE approach/methodology. New MoUs were finalized and signed with India, China and Vietnam NCPCs for conducting and producing outreach activities and materials to widely promote the CP-EE approach and methodology.

c) Transformation of the Policy Frameworks at the Local/National/International Levels:

The project has led to the creation of awareness on the need and importance of integrating the EE & CP activities in the SME sectors in the participating SMEs in all the project countries.

As per NCPCs in India, Vietnam and China, they have provided expert advice to various government bodies in the formulation of national policies and frameworks on the EE & CP practices. However, it cannot be concluded with confidence (due to lack of correlated evidence) that the project has created a significant transformational effect on the policy frameworks.

d) Project results in terms of quantification of the energy saved, investments made and the Green House Gases reduced:

The information was collected and collated from the project documentations, interviews with NCPCs, the project coordinator and SMEs in the six participating countries. As per the information provided by UNEP-DTIE, the summary of the energy saved, investments made and the Green House Gases reduced is presented in the tables above in section 3.0 (details available in **Annex IV & V**).

Considering all of the above stated, the overall rating of the project on attainment of project objectives and results is ‘Satisfactory’.

B. Assessment of Sustainability of Project Outcomes

The sustainability of the project outcomes has been evaluated on the following three aspects (as per TOR) in terms of the persistence of the project impacts after the project funding ends.

- a) **Financial:** As per details made available by UNEP-DTIE, the support provided by the participating units on the project of US\$ 3,722,000 (refer **Annex VI**) has been ‘in kind’ in terms of the professional resources made available to NCPC personnel for undertaking the 87 EE & CP audits during the project period. In absence of correlated evidence, the information could not be validated.

During the evaluation visits to participating SMEs (names of enterprises provided in **Annex II**) in Hungary, Slovak Republic and Vietnam the evaluator found that the enterprises have created their own dedicated teams to carry out audits and implementing the recommendations on EE & CP activities on a regular basis.

Further, the discussion with NCPC personnel during the evaluation visits has revealed that the NCPCs in all the participating countries except Hungary and Czech Republic (new CPC) are using the experience gained from the project to conduct EE-CP audits in the SMEs on a chargeable basis, hence sustaining the project initiative beyond project funding.

- b) **Socio-Political:** Considering the facts: the project has been able to conduct 87 EE-CP audits against a target of 90, able to achieve an estimated 219,000 tons CO₂ equivalent emission reduction against the target of 225,000 tons of CO₂ equivalent and trained a number of NCPC personnel far exceeding the target, leads to a conclusion that the project has been able to create significant awareness about EE-CP benefits in the participating SMEs. This would lead to higher implementation of EE&CP policies crafted by the government and to a subsequent reduction in GHG emissions.

Furthermore, an enabling environment has been created for sustainability of EE-CP measures propagated by the project in all the participating countries due to increased energy prices and the rising concern for Green House Gases (GHG) reduction.

- c) **Institutional Framework and Governance:** at the national level, in all the participating countries policy frameworks (environmental laws and/or conducting of compulsory EE-CP audits) have been created to foster energy efficiency and cleaner production. Moreover, many institutions have also been mandated to carry the energy efficiency and cleaner production agenda forward. However, these may not be considered as a direct consequence of this project, due to lack of correlated evidence.

C. Achievement of Outputs & Activities

As per requirements of the TOR, the assessment of the project with respect to achievements of output and activities has been summarized as an answer to the following questions:

- a) *Has the Project supported NCPCs in acquiring technical knowledge on EE and its integration to CP? and*
b) *Has the project supported the private sector in understanding EE-CP methodologies?*

Yes. As per discussions with the NCPCs during the evaluation, the project has extended support to them in acquiring technical knowledge and its integration to CP practices. Furthermore, as per the details provided in section 3.1(capacity building activities), the project targeted **training** 18 persons across six NCPCs to become capable of managing/conducting energy efficiency audits in industries as part of a CP-EMS program. Based on the information provided by UNEP-DTIE, the project has exceeded the target by making 126 persons across six NCPCs capable of managing/conducting CP-EMS audits.

Also, capacities of NCPCs were developed to enable the use of a GHG indicator software available in the public domain. For details see **Annexes IV & V**.

With regards to the support provided to the private sector towards understanding EE methodologies, the NCPCs have created awareness & developed skills in EE-CP methodologies by:

- i) Conducting 87 EE-CP audits in the participating SME units in six participating countries, and
- ii) Development and dissemination of “Business Case Brochures” in India, China and Vietnam which depict the integrated CP-EE approach/methodology based on the CP-EE audits conducted. The Business Case studies included following industrial sectors: Metal Finishing, Textile, Rayon, Pulp and Paper, Fertilizers, Brewery and Hotel sectors.

The Case Studies/Brochures have supported the CP-EE Project’s strategic plan by:

- Providing effective & articulated core message that describes the CP-EE approach/methodology and the value it brings to industrial enterprises.
- Creating for NCPC staff a clear and lasting core message to communicate with industries.
- Ensuring that the project outcomes are consistently illustrated through the message platform, promotional material, and awareness campaigns.
- Connecting SME efforts and core programs of the NCPCs activities.
- Motivating and building capacity of NCPC staff to consistently communicate the benefits of the CP-EE approach to key stakeholder
- Engaging more industrial enterprises by generating enthusiasm, greater attention and commitment to implement the CP-EE audits.

- c) *Has the project supported and developed investment proposals for equipment with improvement in EE amongst the participating units?*

Yes, to a certain extent. The SMEs in all the participating countries did go through the EE and CP audit activities under the project and also followed up on the implementation of the recommendations made in the audit reports. The bulk of the recommendations were in the areas of housekeeping and retrofit measures seeking either low or no investments.

Moreover, in many participating SMEs, there existed a policy - to implement the recommendations made on EE/CP activities through internal resources rather than going to banks and Financial Institutions (FIs). Hence, the recommendations of the audits were implemented by the participating industries using their own resources, without necessarily going through the process of developing formal investment proposals to be financed by the banks and financial institutions. No investment proposals were submitted to financial institutions for availing loans to implement recommendations of EE-CP audit recommendations.

- d) *Has the project developed and translated an Energy Audit manual adapted to the CP perspective?*

Yes. UNEP-DTIE has developed an Energy Audit manual adapted to the CP perspective. It is a very comprehensive, easy to understand manual that can be practically used by

SMEs to conduct self-audits and prepare programs for the implementation of EE-CP measures.

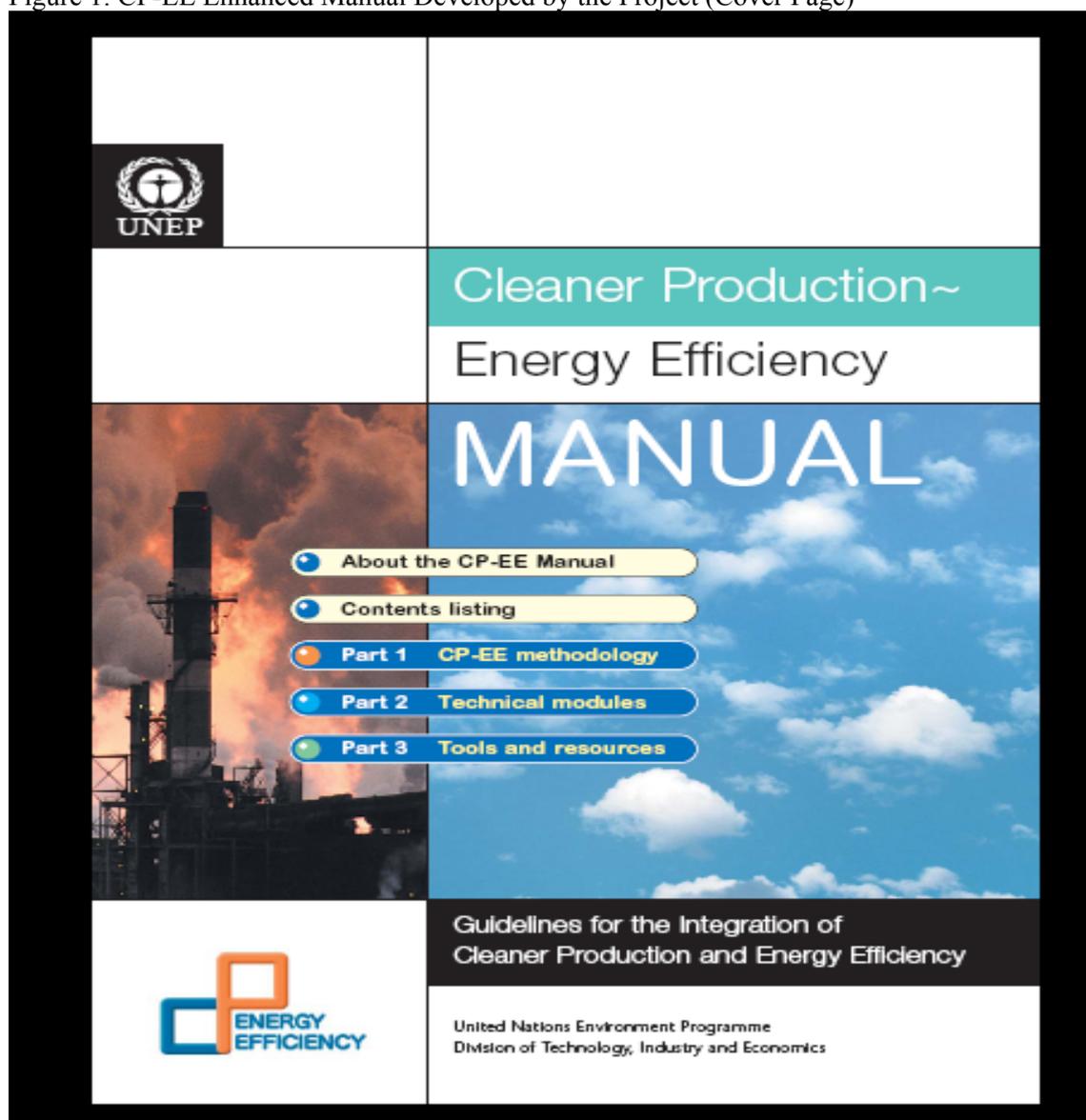
For brief evaluation of the EE Manual see **Annex VII**.

As per discussions with UNEP-DTIE, the number of NCPCs and private companies using the CP-EE manual has been increasing. The six participating NCPCs translated the manual (adapting it to the local needs of the SMEs) to the respective national languages (India adapted the manual in English as this being one of the national languages).

Two hundred copies of the publication have been distributed among NCPCs and related organizations in the private sector. Positive feedbacks have been received from the units/industrial facilities confirming the active use of the manual in their daily work.

Furthermore, based on the core manual prepared at the start of the project, an enhanced CP-EE manual (cover snap shot provided below) has been developed by UNEP-DTIE and India NCPC (available on CD-ROM and as downloadable version on the project web site: <http://www.unep.fr/energy/projects/cp-ee/manual.htm>). The enhanced manual is now being used by other Centres within the NCPC global network to replicate the CP-EE approach. This is one of the significant achievements of the project.

Figure 1: CP-EE Enhanced Manual Developed by the Project (Cover Page)



e) *Has the project established knowledge exchange networks with NCPCs and others not participating in the project?*

According to UNEP-DTIE, the project was successful in establishing knowledge exchange networks amongst the participating NCPCs during the duration of the project. Under the project, an intranet site was created to submit the CP-EE audits and share CP – EE related information & tools among the NCPCs.

For other NCPCs not participating in the project, a “Latin America Dissemination Meeting” for the UNEP-GEF CP-EE project was conducted in Mexico, wherein 43 representatives from the global network of NCPCs attended. The representatives came from the following Latin American countries: Argentina, Colombia, Brazil, Guatemala, Mexico, Nicaragua, Ecuador and Peru. The six NCPCs participating in this project also attended the meeting.

Furthermore, a 10-day "Cleaner Production and Energy Efficiency Training Program" was conducted for NCPCs from Africa and Latin America in January 2005. The training, designed on the concept of "Train-the-Trainer", was hosted by InWent (Capacity Building International) in Feldafing, Germany from 24-28 January 2005. Nine national trainees, from NCPCs in Latin America and Africa, attended the training from the following countries: Costa Rica, El Salvador, Guatemala, Kenya, Mexico, South Africa, Morocco and Mozambique. As a compulsory follow-up activity, participants of the course were then obliged to conduct at least one CP+EE training activity in their respective countries.

The training included presentations, technical training exercises and real case studies and tools from the CP-EE manual. The training helped the participating Cleaner Production Centres from Africa and Latin America, to learn about integration of energy efficiency concepts into CP approaches and to include energy efficiency activities as a comprehensive part of their ongoing core programs and activities

f) *To what extent have policy makers been sensitized in the EE-CP approach?*

The NCPCs participating in the project are either attached to the Government agencies or supported by them. Furthermore, NCPCs have been participating in various forums in which policy makers discussed and formulated initiatives on energy efficiency and cleaner production. During the discussions with NCPCs, it was also revealed that they have been conducting training programs, seminars, workshops in the area of cleaner production and energy efficiency, in which policy makers have also participated.

Although in the project participating countries, policies at national/regional levels have emerged that foster energy efficiency and cleaner production, in absence of correlated evidence, it cannot be said that the project has directly contributed towards the formulation of these policies at the national level.

At the participating SME unit level, the policy makers have been sensitized in all the participating units to undertake energy efficiency and cleaner production. This may have indirectly sensitized policy makers at the national level in the project countries.

g) *How have the project countries and others benefited as a direct/indirect result of the project?*

The direct and indirect benefits from the project have been the following (see **Annex IV & V** for details):

- an annual emission reduction of 219,000 tons of carbon dioxide equivalent;
- Total energy savings to the tune of US \$ 23,084,941 has been achieved;
- 126 professionals trained on EE-CP activities under the project;
- The creation of EE manual, its translation and adaptation to the local conditions in the six participating countries has created awareness on the benefits that can accrue as a result of EE-CP audit implementation; and
- The project may have influenced the formation of the policies fostering energy efficiency and cleaner production in the SME sectors in the participating countries.

h) *To what extent have the specific needs of the target group of stakeholders been considered in the design process and recommendations?*

As per discussions with UNEP-DTIE, the project proposal was prepared by UNEP-DTIE in consultation with the following NCPCs:

- China National Cleaner Production Centre, Beijing, China;
- Czech Cleaner Production Centre, Prague, Czech Republic;
- National Cleaner production Centre of Hungary, Budapest, Hungary;
- Indian National Cleaner Production Centre, New Delhi, India;
- Slovak Cleaner Production Centre, Bratislava, Slovak Republic; and
- Vietnam Cleaner Production Centre, Hanoi, Vietnam.

Furthermore, as per the project document, the project proposed to respond to the specific information needs of SMEs as identified by the NCPCs in their work. Hence, it can be considered that the project did consider the specific needs of the target group of stakeholders into consideration at the design stage. However, in absence of the records/information available on the specific recommendations from various stakeholders at the design stage, the evaluator has not been able to record the extent of inclusions.

D. Monitoring and Evaluation (M&E)

M&E Design

During discussions with UNEP-DTIE, it has been revealed that GEF did not require M&E plans at the time of project approval. Hence, ‘Log Frames’ were not negotiated with GEF and the M&E protocol was not included as part of the project design. UNEP-DTIE focused efforts on M&E as the project matured & progressed.

Based on the discussions with UNEP-DTIE and review of the project document, it has been observed that the project adopted the following success indicators as part of its M&E activities:

- a) Number of audits conducted by participating NCPCs (target: 90 audits).
- b) Number of proposals prepared and submitted to financing institutions (target: 90 proposals).
- c) Energy Audit Manual available in English and adapted to six national conditions/languages.
- d) Number of professionals in the NCPCs capable of managing/conducting energy efficiency audits in industry as part of a CP-EMS program (target: 18 persons).
- e) Number of professionals in the global network of NCPCs and other in-country stakeholders (e.g., Energy Managers Association(s) and Business Councils) aware of methods for providing EMS (target: global network of NCPCs).
- f) Published articles on EMS methods that NCPCs’ can adopt in their bulletins and other information dissemination channels.

However, the means of verifying these success indicators were not described in the project document.

M&E Plan Implementation

As per discussions with UNEP-DTIE, the Division evaluated the progress of the project on the above mentioned indicators as the project progressed, specifically when the PIRs were conducted.

For the information collated from the final PIR on the project review (based on the indicators). In addition, UNEP-DTIE used **templates** for:

- monitoring the audit activities in the participating SMEs.
- evaluating and receiving feedback on the energy efficiency manual from SME units and personnel trained from NCPCs.
- recording the achievement of the projects.
- monitoring the consistency and quality of information provided in the case studies.

Furthermore, sample verification was performed by the project coordinator in six SMEs in India, China, Vietnam and Hungary at the end of the project. The objective of the verification was to have an independent and objective review of the CP-EE assessments conducted by the NCPCs in the six SMEs.

The project did not constitute a Steering Committee to review the project implementation. Therefore, in the absence of a structured M&E approach adopted for the project, the NCPCs followed their own methodologies to monitor the implementation of the project.

Budgeting & Funding of M&E Activities

At the ‘Project Design’ stage, specific budgets were not created for M&E of the project activities. No long-term monitoring of the project was planned and no finances were allocated to review the impact of the project beyond the project funding by GEF. Hence, follow up evaluations on the gains from the project are not available with UNEP-DTIE.

Based on the above, the M&E overall rating has been evaluated as *Moderately Satisfactory*.

E. Catalytic Role

As per UNEP-DTIE, based on the CP-EE approach and lessons learned from the current project a new project proposal was prepared and submitted to the Finnish Government, which has agreed to finance the new project. The new project with the name “Regional Industrial Pollution and CO₂ Emission Abatement Project for Arab Countries: (RIPECAP) is mainly based on the successful experience of the project “Promoting Industrial Energy Efficiency through the Framework of Cleaner Production” (CP-EE Project).

The main objective of the project is to disseminate the benefits and applicability of cleaner production and energy efficiency approaches in three countries (Egypt, Jordan and Morocco) and will assess: i) the current situation of industrial pollution and emissions; ii) previous and on-going similar programmes/projects and their results; and iii) preliminary estimates of the amounts and costs of abating GHGs in the industries. The RIPECAP project will benefit and utilize the resources and tools developed under the CP-EE Project. In the course of this project, the needs of the beneficiary countries will be assessed and a detailed plan elaborated for co-ordinating the proposed project with other relevant regional UNEP/DTIE initiatives in the Arab region.

Moreover, to foster technology transfer, a “Technical Study Report” (based on an audit conducted in India) was developed to analyze the barriers and incentives for the adoption of an emerging industrial energy efficient technology, titled “the Rice Husk-Fired Fluidized Bed

Combustion Boilers (FBC) technology for Cogeneration Systems". This served as an example of a success story on EE-CP integration.

The old CPC in Czech Republic has created a market for its own professional services in the area of EE-CP from the experiences gained from the project. However, in Hungary, the capacity of CPC to carry out audits has been depleted, as the human resources trained under the project have left the CPC.

It can be concluded from above that the project has created overall capacities in the CP-EE area, thus playing the role of a catalyst in the participating countries.

F. Preparation and Readiness

The evaluation has been carried out with reference to the following parameters.

a) Project objectives being clear, practical and feasible within its timeframe:

The project proposal was prepared by UNEP-DTIE in discussions with the Directors of the six participating NCPCs, wherein, the project objectives were in a direct response to the specific information needs of SMEs identified by the NCPCs' work.

Moreover, to ensure that the project objectives, outcomes and the timeframes were clear to the executing agencies (NCPCs), UNEP-DTIE and the National Productivity Council (NPC, India) organized and conducted in India (February 2002) a two-tier training program:

- 1) a three day basic training for the six NCPC directors followed by
- 2) an intensive two week training for technical staff from each NCPC.

Thus, it can be concluded that the project objectives were clear and accepted by all NCPCs and therefore to be practically feasible within the project time frame.

b) Consideration of the capacities of the executing agencies at the beginning of the project implementation:

At the beginning of the project, all six countries had existing NCPCs established with government support and operating under a UNEP/UNIDO framework. The project was designed by UNEP-DTIE in consultation with the six NCPCs, based on the needs expressed by them. The capabilities of NCPCs were strengthened through training of NCPC personnel in areas of EE-CP. At present:

- In China, the National Cleaner Production Centre (NCPC) is attached to the State Environmental Protection Agency (SEPA).
- India's centre is supported institutionally by the National Productivity Council (NPC), a semi-autonomous body affiliated with the Ministry of Industry that is well known for its expertise in energy management.
- The Vietnamese Cleaner Production Centre is supported by both the Ministry of Planning and Investment and the Ministry of Science, Technology and Environment,
- The Czech Cleaner Production Centre works in coordination with the Government to create awareness about the EE-CP activities, whereas the old NCPC had strengths to conduct EE-CP audits.

- In Slovakia, the Cleaner Production Centre is constituted as an NGO but has government officials on its Steering Committee.
- The Hungarian Cleaner Production Centre has departmental status within the Department of Environmental Economics and Technology in Faculty of Business Administration, Budapest University of Economic Science and Public Administration, which is a government institution, but capability constraints on conducting EE-CP audits.

Hence, due consideration was given to capacities of the executing agencies at the beginning of the project implementation.

c) Lessons from other projects incorporated:

As per discussions with UNEP-DTIE and NCPCs, organizational experiences were pooled to design this project objectives and deliverables.

d) Existence of enabling legislation in place:

Before the start of the project, the six project countries had all emphasized the need to improve industrial energy efficiency in their national environmental policies and programs:

- The Czech Republic addressed the need to improve energy efficiency in Governmental Decree 252 (1991) and mentioned the importance of energy conservation explicitly in its State Environmental Policy.
- Slovakia revised its national energy policy in 1999; the policy recommended ‘optimization of State support to rationalization of energy use and minimization of energy consumption’.
- India had since mid-1970s emphasized the need to improve industrial energy efficiency and had a number of government programs that supported investments.
- China established a National Energy Conservation Information Centre and started investigating how enterprises interested in environmental management system certification (particularly ISO14001) can be linked to energy conservation.
- Hungary and Vietnam similarly made energy efficiency in industry a national priority.

The foresaid created an enabling environment for the project to succeed.

e) Effectiveness/efficiency/adaptability of the Project Management and supervision of project activities at all levels i) Policy decisions-Coordination group ii) day to day project coordination iii) UNEP-DTIE guidance.

As already elaborated in Section 3.1 C ‘Achievements of Output & activities’, the project has been efficient in achieving its output targets (for details see **Annexes IV & V**).

Considering the geographical extension of the project involving 6 countries in 2 very different Continents; the nature of the activities; the number of industries involved; and the achievement or results, it can be concluded that project management was effective both at the UNEP-DTIE and the NCPC levels.

However, there was no project Steering Committee to review the project outcomes and collate feedback at various stages of the project implementation and take corrective action. UNEP-DTIE through its MOU’s (I, II & III) followed up on the project activities and undertook six project revisions (elaborated in section I below).

As regards to the project management and guidance provided by UNEP-DTIE, all the participating NCPCs have expressed their appreciation for UNEP-DTIE during the evaluation interviews.

Hence, considering all the factors above described, the preparation and readiness of the project has been rated as “Highly Satisfactory”.

G. Country Ownership & Drivenness

The project has been in line with the national priorities and plans for all the participating countries. Moreover, the rising costs of energy and considerations for cleaner production, prompted development of EE framework and CP regulations at the national and regional levels, during the implementation phase of the project.

The project has created awareness and drive for the EE and CP activities in the participating units in the SME sector, thus contributing indirectly to the national priorities and plans.

Various national stakeholders including industrial associations in the participating countries have been involved with providing feedback on the project. Their SME members have benefited from the project activities as the project has been able to provide information and tools to the participating SMEs, so as to integrate the EE and CP activities in their ‘Core Business Activities’.

Though the project created awareness among various stakeholders and fostered the creation of an enabling environment that led to creation of EE-CP initiatives at the national level, there has been no direct co-financing from the Governments of the participating countries.

Further, in absence of correlated evidence about the project impacting the national policies, it cannot be assessed whether the project impacted the national EE-CP policies directly.

Considering above, the project has been rated as “Unsatisfactory” on country ownership and drivenness.

H. Stakeholders’ Involvement

Stakeholders’ involvement has been evaluated at the following levels:

a) *Various project stages (Design, implementation and monitoring):*

Discussions with UNEP-DTIE, NCPCs, SMEs and various interviewees (see **Annex II**), indicated that the aforementioned stakeholders were consulted at various stages of the project design, implementation and monitoring. The correlated evidence of stakeholder’s direct involvement at various stages of the project is absent and hence cannot be ascertained with certainty.

b) *Did project implement appropriate outreach and public awareness activities?*

As discussed in section C, UNEP-DTIE in collaboration with NCPCs in India, China and Vietnam prepared nine “Business Cases brochures” depicting integrated CP-EE approach/methodology based on the audits conducted in the project. MoUs were finalized and signed with India, China and Vietnam NCPCs for conducting and producing outreach activities so as to widely promote/disseminate the CP-EE approach and methodology.

NCPCs in Hungary, Slovak and Czech Republic implemented 'Out reach Programs' to disseminate the information, create awareness and build capacities of various stakeholders through their web sites, press/media, workshops and conferences .

Considering the above, the stakeholders' involvement in the project is rated as 'Moderately Unsatisfactory'.

I. Financial Planning

Based on the discussions with UNEP-DTIE and the information made available by them six budget revisions for this project were made throughout the project lifetime (including reallocation of funds to the various budget lines).

The significant reasons provided by UNEP DTIE for the revisions include:

Revision 1:

- a) To reflect the actual expenditure for the year 2002 to the GEF Trust Funds;
- b) To re-phase year 2002 unspent funds;
- c) To reflect the swapping of objects of expenditure description among Czech & Slovak Republics; and
- d) To extend the duration of the project through October 2004 to cater for delayed commencement of implementation.

Revision 2:

- a) To reflect the actual expenditure for the year 2003 to the GEF Trust Funds; and
- b) To re-phase year 2003 unspent funds

Revision 3:

- a. To extend the duration of the project to 30 May 2005:

In order to allow time for the completion of the activities yet to be implemented-organizing the two regional workshops for NCPCs in Latin America & African regions.

Revision 4:

- a) To reflect the actual expenditure for the year 2004 to the GEF Trust Funds;
- b) To re-phase year 2004 unspent funds; and
- c) To extend the duration of the project through October 2005 to cater for delayed commencement of implementation.

Revision 5:

- a) To reflect the actual expenditure for the year 2005 to the GEF Trust Funds;
- b) To re-phase year 2005 unspent funds; and
- c) To extend the duration of the project through March 2006. This extension was requested by GEF, so as to help validate the GHG reductions achieved during the course of the project and to create an awareness activity in the participating countries by producing outreach material.

Revision 6:

- a) To reflect the actual expenditure for the year 2005 to the GEF Trust Funds;
- b) To re-phase year 2005 unspent funds; and

- c) To extend the duration of the project through June 2007 to allow completion of following activities:
- Outreach Activity: NCPCs to develop promotional material & communication plan for CP-EE approach;
 - To promote an innovative energy technology of a cogeneration system using agricultural residue. Promoting awareness on integration of EE-CP technology;
 - To allow time for completion of GHG verification activities; and
 - To allocate funds for terminal evaluation of the project.

However, despite all the revisions the total cost of the project to the GEF Trust Funds and co-financing has remained unchanged. Hence, the financial planning on the project has been rated as “Satisfactory”.

J. UNEP Backstopping & Supervision

As per the discussions with participating NCPCs and SMEs interviewed during the evaluation, UNEP-DTIE has performed well in providing the technical support on all the project activities. Moreover, UNEP-DTIE was able to:

- Coordinate the development of the CP-EE enhanced manuals (CP-EE Manual) and other tools (GHG indicator) to enable NCPCs to conduct the CP-EE audits and increase the environmental and economic development benefits of greenhouse gas reduction measures;
- Increase the use of the CP-EE manual among enterprises, to provide more CP-EE technical options and energy savings that led to more GHG emission reductions;
- Help NCPCs prepare the audit reports in a way that would convert and illustrate the technical improvements/measures recommended as economic value for; money. This made EE measures more affordable and easily understandable to top management within the units/industrial facilities;
- Broaden the base users of the UNEP tool “GHG Indicator-Guidelines for Calculating Greenhouse Gas Emissions”, to provide a measuring and reporting tool for the GHG emissions reduction within a company; and
- Increase the use and enhance the CP-EE Intranet site, as an information web based tool, to facilitate information exchange between project partners.

From the above, UNEP supervision of the project is hereby rated as “Highly Satisfactory”.

4. Conclusions

As per discussions with various stakeholders during the evaluation, it has been observed that the project has been able to create awareness and build capacities on the EE-CP integration amongst them.

Furthermore, based on the information provided by UNEP-DTIE (quantification could not be verified due to lack of correlated evidence), it can be concluded that the project has succeeded in meeting its objective of reducing emission of Green House Gases (GHGs) by identifying and implementing Energy Efficiency (EE) improvements as an integral part of CP-EM audits in Small and Medium size Enterprises (SMEs) in six countries.

There have been revisions in the timelines (project duration was 20 months starting in February 2002, which was later revised and extended to be completed in June 2007, making a total duration of 63 months), budgets (despite all the revisions the total cost of the project to the GEF Trust Funds and co-financing has remained unchanged) and development of an M&E protocol as the project progressed.

Considering the foresaid and the fact that the project was in SMEs in six different countries across two continents the overall rating of the project is evaluated as ‘Satisfactory’.

4.1. Summary of the Project Ratings

The summary of the various ratings based on the discussions provided above and as per Evaluation TOR are provided below:

Criterion	Evaluator's Rating	EOU Rating
A. Attainment of project objectives and results (overall rating) Sub criteria (below)	S	Project main objectives seem to have been achieved although not all the countries involved attempted "policy influence" as intended by the project S
A. 1. Effectiveness	S	
A. 2. Relevance	HS	
A. 3. Efficiency	S	
B. Sustainability of Project outcomes (overall rating) Sub criteria (below)	ML	The project produced important outputs such as training and the EE-CP manual which will have long-lasting benefits

Criterion	Evaluator's Rating	EOU Rating
		expanding to countries not involved in this project too. L
B. 1. Financial	ML	
B. 2. Socio-Political	ML	
B.3. Institutional framework and governance	ML	
C. Achievement of outputs and activities	S	All planned activities were carried out and important outputs achieved with high standards HS
D. Monitoring and Evaluation (overall rating) Sub criteria (below)	MS	Sample verifications should have occurred in all 6 participating countries. A monitoring plan should have been thought through at project design stage regardless of GEF formal requirements MS
D. 1. M&E Design	MS	
D. 2. M&E Plan Implementation (use for adaptive management)	MS	
D. 3. Budgeting and Funding for M&E activities	MS	
E. Catalytic Role	S	EOU agrees with the consultant S
F. Preparation and readiness	S	EOU agrees with the evaluator S
G. Country- ownership/drivenness	U	EOU agrees with the evaluator U
H. Stakeholders involvement	MU	No evidence is given of important stakeholders' (such as governments) involvement during project design stage

Criterion	Evaluator's Rating	EOU Rating
		and during project execution MS
I. Financial planning	S	EOU agrees with the consultant S
J. UNEP Supervision and backstopping	HS	UNEP supervision appears to have been very active, however, some limitations were found in the M&E activities S
Overall Rating	S	MS

S- Satisfactory, HS- highly Satisfactory, ML-Most Likely, MS-Moderately Satisfactory, MU-Moderately Unsatisfactory, U-Unsatisfactory, HU-Highly Unsatisfactory

4.2 Recommendations

1. Typical GEF projects range from demonstration projects and direct investments, to financing mechanisms that leverage local private sector financing, to capacity building and technical assistance, to the development and implementation of government policies supporting climate-friendly investments (leading to GHG reductions, as in the current project) in energy and other sectors.

Moreover, the GEF projects typically focus on facilitating future market development, removing barriers, and putting the right conditions in place so that emissions and energy needs will not rise in the future. These projects are necessarily risky, their outcomes uncertain, and they vary in their degree of uncertainty both between and within projects. GEF projects are typically exposed to a larger number of implementation uncertainties, which decrease the probability that the expected positive outcomes of a project to be achieved in the given amount of time.

A GEF project can have direct CO₂ emission reductions achieved by investments that are directly part of the results of the projects; direct post-project emission reductions through those investments that are supported by GEF-sponsored financial mechanisms still active after the projects' supervised duration; and a range of indirect impacts through market facilitation and development.

GEF has developed a Manual for calculating GHG benefits of GEF projects: Energy Efficiency and Renewable Energy Projects.

The future projects can use the guidance provided in the fore mentioned manual for the calculation of GHG benefits accruing from the GEF projects.

2. During the evaluation, SMEs have indicated that the Banks and Financial Institutions lack full understanding of financing based on energy efficiency investments. It is recommended that in future GEF projects, a component may be included to build the capacities of the 'Bankers/Financial Institutions (FIs)' in the area of energy efficiency and cleaner production. This would help financing the EE-CP projects in the SMEs.

4.3. Lessons Learnt

1. For success of a project in SMEs, it is essential that views of all the stakeholders are considered at the design, planning and implementation stage of the project.
2. Creation of a robust M&E plan (including Key Performance Indicators) at the design stage of the project helps avoid revisions in the project planning and re-allocation of funds.
3. In SMEs, generally the implementation of Energy Efficiency-Cleaner Production (EE-CP) audit recommendations, result in three types of investment actions:
 - A. Housekeeping actions with small investments and payback periods of less than one year- financed by internal funds.
 - B. Short-term (one year or less payback period) equipment related investments are generally financed by SMEs through their own operating budget or small loans.
 - C. Long-term (more than one year) large investments are financed by external loans.

For the project requiring small investments, the first and the best actions SMEs can take for the implementation of these are those which are mobilized by their internal funds as most of the CP-EE Project audits focus mostly on actions of types A and partly B.

ANNEX I: STRUCTURED QUESTIONNAIRE (USED FOR SOLICITING INFORMATION FROM NCPCS)

Dear, Director, NCPC

As part of the Terminal Evaluation of the UNEP project “Promoting Industrial Energy Efficiency through a Cleaner Production/Environmental Management System Framework”, your inputs are requested on the following questions.

I understand your busy schedule but would appreciate your valuable inputs as these will create learning on the good features of the UNEP project that happened under your leadership. Further, your experiences and inputs can also be shared across amongst other NCPC’s, thus creating overall value in the UNEP initiative.

Moreover, your candid feedback will help in creating understanding about the constraints under which the projects were implemented and how the ‘Design’ of the program can be improved in future *“to reduce emission of greenhouse gases by identifying and implementing energy efficiency (EE) improvement as an integral part of Cleaner Production/Environmental Management System (CP-EMS) audits in industrial enterprises in six countries”*.

Regards

**Naval Karrir, PhD
UNEP, Consultant**

Project Background and Inputs Requested on:

Project Background

The project had five components:

1. Undertaking of energy audits by the participating NCPCs (15 audits per country)
2. For each audit, development of at least one investment proposal for equipment with improved EE.
3. Preparation of national versions of an energy audit manual from an EMS/CP perspective available to NCPCs and similar institutions. The core manual was already produced in English as a joint UNEP/UNIDO activity
4. Training of personnel in the six NCPCs capable of conducting energy audits as an integral part of a CP-EMS audit
5. Awareness raising of personnel in the global network of NCPCs and other in-country stakeholders (e.g. Energy Management Associations and Business Councils) for opportunities that EMS can provide if integrated into the NCPC business advisory practices and methods for doing so.

Inputs Requested:

Overall

- *To what extent has the project improved the promotion of GHG mitigation by removing barriers that prevent the integration of EE improvements and energy management practices with general environmental management approaches?*
- *To what extent has the project been able to build capacity and increase the implementation of EE in industries, particularly in the SMEs?*
- *To what extent has the project been able to create a structured energy audit methodology and management approach consistent with related concepts such as EMS-CP?*

II. Specific

Project Objectives, Design and Results achieved so far:

1. How the Project Objectives were identified & Design formulated (National / Regional Policies, Previous Studies, NCPC's experience with SME's & other sectors, on going Governmental / Multilateral /Bilateral Programs in Energy Efficiency (EE), Cleaner Production (CP) or GHG Mitigation)?

This is to understand what was the 'Project Framework & Boundary Conditions' & 'Process' followed to identify the Objectives and how the 'Milestones & Success Indicators' carved out? Includes:

- i. How were the capacities of the executing institutions and counterparts assessed when the project was designed?
 - ii. How lessons (if any) from other relevant projects were incorporated in design?
 - iii. How were the partnership arrangements (if any) identified and the roles and responsibilities decided for project implementation?
 - iv. How were the availability of counterpart resources (if any -funding, staff, and facilities), passage of enabling legislation (if any) , and adequate project management arrangements incorporated in the project design ?
 - v. How has the project design incorporated the national sectoral and the development priorities and plans?
 - vi. How are the government approved policies or regulatory frameworks been in-line with the project's objectives?
2. What were the 'Key Objectives' and corresponding 'Milestones' in Short –Term (2-3 yrs) and Long-Term (More than 5 yrs)?

3. What are the significant 'Achievements' wrt Objectives up till now and expected in 'Short/ Long-Term)?
4. To what extent the results of this project have impacted local, national, regional or international Policies / Processes/ EE & CP in SMEs and other sectors.
5. How did the project contribute to the wider portfolio of UNEP's DTIE and work plans for 2001 -2007?
6. How was the Budget created for the project? (This is to understand the Activity based Costing of various Project Activities)
7. Did the Budget need revision? If yes? Which activities and percentage variation over estimation? Did the project encounter any barriers on financing?
8. Did the Project receive any contributions (cash or kind) / co financing from any source? What was the quantum of additional resources leveraged from other sources than UNEP?
9. Can the EE/CP investments be quantified that were the direct resultants of the UNEP Project? If yes, specify the estimated quantum of investments and the corresponding energy savings and emission reductions. (The estimates need to correspond to the baselines on energy efficiency, corresponding improvements & reductions in GHG emissions)
10. What were the significant barriers that Project encountered from 'Design to Implementation' stage? How were these barriers overcome?

Assessment of Sustainability of project outcomes:

Sustainability: probability of continued long-term project-derived outcomes and impacts after the UNEP project funding ends.

1. Are there any conditions or factors that are likely to contribute or undermine the persistence of benefits after the project ends?
2. What kinds of 'Follow Up' strategies have been incorporated in the 'Project Design' to as to indicate its sustainability? Have these strategies been implemented?
3. What is the likelihood that any required financial resources will be available to sustain the project outcomes/benefits once the UNEP assistance ends (resources can be from multiple sources, such as the public and private sectors, income generating activities, and market trends that support the project's objectives)?
4. To what extent are the outcomes of the project dependent on socio-political factors?
5. What is the likelihood that the level of stakeholder ownership will allow for the project outcomes/benefits to be sustained?

6. Is there sufficient public/stakeholder awareness in support of the long term objectives of the project?
7. To what extent are the outcomes of the project dependent on issues relating to institutional frameworks and governance?
8. What is the likelihood that institutional and technical achievements, legal frameworks, policies and governance structures and processes will allow for, the project outcomes/benefits to be sustained?
9. What kind of 'Capacity Building' activities would be required at Institution, Local, Regional, National levels to 'Sustain' the project?
10. What kind of approach be suitable to design an 'Impact Assessment Study' for the project in a few years time ? Which will be the major 'channels' for longer term impact from the project at the national and international scales?

Replication and Catalytic role

(Replication approach is defined as lessons and experiences coming out of the project that are replicated (different geographic areas & other funding sources) or scaled up in the design and implementation of other projects).

1. What is the catalytic or replication potential/effect of the project wrt EE / CP in SMEs & other sectors. Any examples?
2. Would the Project's catalytic or replication enhances its sustainability? If yes, how?

Achievement of outputs and activities:

How has the project:

1. Supported the NCPC in acquiring technical knowledge on EE and its integration to CP?
2. Supported the private sector in adopting and understanding EE methodologies?
3. Supported and developed investment proposals for equipment with improvement EE amongst the participating enterprises?
4. Developed and translated an Energy Audit manual adapted to the CP perspective?
5. Established knowledge exchange networks amongst NCPC stakeholders and others not participating in this project?
6. Sensitized government's policy makers towards EE-CP approach?

7. Benefited various NCPC stakeholders & others as a direct/indirect result of this project?
8. Addressed the specific needs of the target groups of stakeholders in the design process and the recommendations?

Project or subproject	Investment	Annual MWh electric or GJ thermal	GHG emission reductions over life of plant	Causality or influence factor	Impact (GhG x influence factor)

Monitoring and Evaluation (M&E) Plan & Implementation strategy:

1. What are the key features of M&E plan used for the project? (Seeks to understand the 'Indicators' identified in the plan, their assessment methodology-frequency , 'Implementation and Course correction strategies')
2. Were any 'Risks' identified wrt project implementation? If yes, what strategies were followed to mitigate the risks?
3. Was the information provided by the M&E system used during the project to improve project performance and to adapt to changing needs?
4. What kind of training was provided to parties responsible for M&E activities ?
5. How does the M&E plan / system ensure that the data will continue to be collected and used after project closure?
6. Were adequate budget provisions available for M&E plan implementation
7. How did Coordination Group (Policy Decision), Task Manager (day to day project management) and UNEP/DTIE guidance help the project ?

Project Execution

- a. How are project outcomes contributing to national development priorities and plans?
- b. How are the relevant country representatives, from government and civil society, involved in the project?
- c. Has the governments committed resources towards the project or maintain its financial commitment to the project?
- d. Was the project effective in providing and communicating information and tools that assisted governments and other national stakeholders to support the development of the EE-CP integrated approach? if yes,how?

Stakeholder involvement.

- a) How has the project involved the relevant stakeholders (through information sharing, consultation) and sought their participation in project's design, implementation, and monitoring and evaluation?
- b) How did the project implement appropriate outreach and public awareness activities?
- c) Did the project consult and make use of the skills, experience and knowledge of the appropriate government entities, NGOs, community groups, private sector, local governments and academic institutions in the design, implementation and evaluation of project activities?
- d) How were perspectives of those that would be affected by decisions, those that could affect the outcomes and those that could contribute information or other resources to the process taken into account while taking decisions?
- e) How were the relevant vulnerable and the powerful groups, the supporters and the opponents, of the processes involved?
- f) If there were delays in project implementation and completion, what were the reasons for them?
- g) Did delays affect the project's outcomes and/or sustainability, and if so in what ways and through what causal linkages?

ANNEX II: LIST OF INTERVIEWEES

Name	Organization, Title	Contact Information
Mr. Amr M Abdel Hai	UNEP – Project Coordinator	15 rue de Milan-75441, Paris Cedex 09, France Tel : 331 44 37 76 16 Email : amr.hai@unep.fr
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Mr. Andrej Soltes	Association of Industrial Ecology in Slovakia, Director	Mlynske nivy 48 82109 Bratislava, Slovakia Tel :421 2 5341 1420 soltes@aspek.sk
Mr. Jozef Klinda	Ministry of Environment, Slovak Republic, Director General	Namestie L Stura c.1 812 35 Bratislava

Name	Organization, Title	Contact Information
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Mr. Ivan Jasensky (Participating Company)	Karamic Studio	935 84 Tupa 54, Slovakia
Mr Miroslav Krcma Team Member Ms. Eva Hralova	Czech NCPC, former director Now working for the <i>Centre for Innovation and Development</i>	CIR, Dittrichova 6 120 000 Prague 2 Czech Republic Tel: +420 2 2492 0265 +420 2 2491 9148 krcma@cir.cz hralova@cir.cz
Ms Klara Najmanova	Czech NCPC, Director	Cenia , Czech Environmental Information Agency Litevska 8, 100 05 Praha 10 Tel : 420 267 225 279 Klara.Najmanova@cenia.cz
Mr. Pavel Ruzicka	Ministry of Environment of Czech Republic	Vrsovicka 65 100 10 Prague 10 Tel : 420 267 122784 Pavel-ruzicka@env.cz
Mr. Josef Vokurka (Participating Company)	TEDOM	Masarykova 1436 268 01 Horovice Tel : 420 311 744 741 vokurka@tedom-vks.cz
Mr. Pawan Kumar	Director , NPC	Utpadakta Bhawan, 5-6 Institutional Area, Lodhi Road New Delhi – 110003 Tel 91 11 24607311 Dpawan.kumar@npcindia.org
Dr. Arvind Asthana	National Productivity Council (NPC), Former , Director in charge, India	Tel.: +91 (11) 24622359 +91-11-24697446 ak.asthana@npcindia.org asthanaak@yahoo.co.in
Mr. Rajiv Garg	India NCPC, Deputy Director	rajeev.garg@npcindia.org
Mr. Pankaj Aggarwal Mr. Girish Luthra (Participating Company)	Bindlass Duplex Luthra Dying & Printing	(Telephonic Interviews arranged by NPC India)

Name	Organization, Title	Contact Information
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Ms. Mao Yan Ms. Nue Ping	Chemical Registration Center , SEPA, Beijing Vehicle Emission Control center, Beijing	Stakeholders
Ms. Ngo Thi Nga Team Members Ms. Vu Tuong Anh Mr. Dinh Manh Thang Mr. Tran Duc Chung Ms. Hong Loan	Vietnam Cleaner Production Centre, Director	4 th Floor, c 10 Bldg Hanoi University of Technology Dai Co Viet Road , Hanoi Vietnam Tel.: +844 868 16 86/7 nga.nt@vncpc.org
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ANNEX III: TERMS OF REFERENCE FOR THE ASSIGNMENT

TERMS OF REFERENCE

Terminal Evaluation of the UNEP project “Promoting Industrial Energy Efficiency through a Cleaner Production/Environmental Management System Framework”

1. PROJECT BACKGROUND AND OVERVIEW

Project rationale

By ratifying the UNFCCC, countries agree to promote the application of technologies, practices, and processes that reduce or prevent emissions of greenhouse gases (GHG). Improving end use energy efficiency in industries is one way to meet this obligation while simultaneously reducing local and regional air pollutants.

Energy consumption in the industrial and commercial sectors accounts for a large percentage of greenhouse gas emissions in CEITs in the more industrialized developing countries. Poor energy efficiency is of concern to governments, and many have undertaken programmes to improve end use efficiency in industry, often focusing on small and medium enterprises (SMEs), where the advantages of improving energy efficiency are often not appreciated and gains are large.

The six countries involved in this project: China, India, Vietnam, Czech Republic, Hungary and Slovak Republic have all emphasized the need to improve industrial energy efficiency in their national environmental policies and programmes. All six countries also have existing National Cleaner Production Centres (NCPCs), each established with government support and operating under a UNEP/UNIDO framework.

The project responded to specific information needs of industry identified by NCPC directors in their work, particularly needs of SMEs. The proposed approach harnessed the private sector’s demonstrated motivation to make investments that yield a financial return and its current interest in the ISO 14001 Environmental Management system. It used these to promote in industries, an EMS approach that includes best energy management practices and investments that reduce GHG emissions.

The overall goal of the project was stated as: *“to reduce emission of greenhouse gases by identifying and implementing energy efficiency (EE) improvement as an integral part of Cleaner Production / Environmental Management System (CP-EMS) audits in industrial enterprises in six countries”*.

The expected outcome from this project included:

- The project intended to integrate EE concepts into CP approaches and train/develop CP professional working in the existing UNEP/UNIDO network of NCPCs. This should have allowed the Centres to include, on an ongoing basis, EE activities as a comprehensive part of their core programmes, which are primarily aimed at SMEs.

Relevance to UNEP-GEF Programmes

The project fits within UNEP's operation programme n.5 (removal of barriers to energy efficiency).

UNEP's CP Programme catalyzes the implementation of policies and strategies that support a preventive environmental management approach including the utilization of energy. The proposed intervention complements UNEP's CP programme and builds on the organization's strong industry base, particularly its ability to reach a diverse range of SMEs through the NCPC network. The project also complemented and benefited from existing projects concerning the financing of CP production investments (funded by the Government of Norway) and the provision to financial institutions of advisory services regarding climate friendly investments (funded by the GEF). For Hungary, the Czech Republic and Slovakia, there was the possibility that energy efficiency investments identified in the project could have been funded by Monitoring & Targeting ESCOs which were very likely to have been established as a result of GEF support in Central and Eastern Europe. Some of the outputs can be used immediately by other centres; the results and experiences gained will be shared with all the centres participating in the NCPC network.

The project complemented well with other GEF efforts in the six countries, including *Energy Conservation and Pollution Control in Township and Village Enterprise Industries* (China); *Energy Efficiency Co-Financing Programme* (Hungary); *Efficient Industrial Boilers* (China); *China Energy Conservation Project* (China); *Efficient Lighting Initiative* (Czech Republic and Hungary); and *Energy Efficiency* (India). All of these efforts should have benefited from improved understanding and commitment to EE efforts on the part of SME Entrepreneurs and managers and an expanded pipeline of good investment projects.

Executing Arrangements

UNEP Division of Technology, Industry and Economics (UNEP-DTIE) together with the six NCPCs are the executing agencies. The project was expected to be completed within 18 months after its approval by UNEP.

Project Activities

The project duration was 20 months starting February 2002, which was later revised and extended to be completed in June 2007, making a total duration of 63 months.

The project had five components¹:

- 6) Undertaking of energy audits by the participating NCPCs (15 audits per country)
- 7) For each audit, development of at least one investment proposal for equipment with improved EE.
- 8) Preparation of national versions of an energy audit manual from an EMS/CP perspective available to NCPCs and similar institutions. The core manual was already being produced in English as a joint UNEP/UNIDO activity and was adapted and translated for use in the six project countries as part of the project
- 9) Training of personnel in the six NCPCs capable of conducting energy audits as an integral part of a CP-EMS audit

¹ Please refer to the Project Document for the project's specific activities and indicators

- 10) Awareness raising of personnel in the global network of NCPCs and other in-country stakeholders (e.g. Energy Management Associations and Business Councils) for opportunities that EMS can provide if integrated into the NCPC business advisory practices and methods for doing so.

Budget

The total GEF budget for the project is US\$ 950,000. In addition to this, in-kind contributions (staff time etc) are provided by UNEP and the six NCPCs with a total value of 2,174,000 US\$. UNEP in kind contribution adds-up to US\$ 175,000 and NCPCs is US\$1,590,000.

TERMS OF REFERENCE FOR THE EVALUATION

1. Objective and Scope of the Evaluation

The objective of this terminal evaluation is to determine the extent to which the project objectives were achieved, or are expected to be achieved, and assess if the project has led to any other positive or negative consequences. If possible the extent and magnitude of any project impacts to date will be documented and the likelihood of future impacts will be determined. The evaluation will also assess project performance and the implementation of planned project activities and planned outputs against actual results. The evaluation will focus on the following main questions:

- *To what extent has the project improved the promotion of GHG mitigation by removing barriers that prevent the integration of EE improvements and energy management practices with general environmental management approaches?*
- *To what extent has the project been able to build capacity and increase the implementation of EE in industries, particularly in the SMEs?*
- *To what extent has the project been able to create a structured energy audit methodology and management approach consistent with related concepts such as EMS-CP? In other words, how effective was the development and application of an integrated energy-environment management approach through the route of EE-CP-EMS which aimed at an overall improvement in the environmental performance of enterprises?*

Please provide evidence to support judgments and conclusions.

2. Methods

This terminal evaluation will be conducted as an in-depth evaluation using a participatory approach whereby the UNEP/ DTIE Project Coordinator and DGEF Task Manager, key representatives of the executing agencies and other relevant staff are kept informed and regularly consulted throughout the evaluation. The consultant will liaise with the UNEP/EOU and the UNEP/DTIE Task Manager and Project Coordinator on any logistic and/or methodological issues to properly conduct the review in as independent a way as possible, given the circumstances and resources offered. The draft report will be circulated to UNEP/DTIE Task Manager, key representatives of the executing agencies and the

UNEP/EOU. Any comments or responses to the draft report will be sent to UNEP / EOU for collation and the consultant will be advised of any necessary revisions.

The findings of the evaluation will be based on the following:

7. A desk review of project documents including, but not limited to:
 - (a) The project documents, outputs, monitoring reports (such as progress and financial reports to UNEP and annual Project Implementation Review reports) and relevant correspondence.
 - (b) Notes from the UNEP and NCPC Bilateral meetings.
 - (c) The Energy Audit Manual developed, CDROM and website
 - (d) Other material produced by the project staff or partners.
8. Structured Questionnaires and Interviews with the directors of each participating NCPC. The list of interviewees is included in Annex 4.
9. Structured Questionnaires and interviews (email and telephone) with intended users for the project outputs and other stakeholders involved with this project. These interviews will be facilitated by the NCPCs.
10. Interviews with the Head of the Energy Branch UNEP/DTIE, DGEFF Task Manager and DGEF Fund Management Officer, and other relevant staff in UNEP as necessary.
11. Site visits to the NCPCs

Key Evaluation principles.

In attempting to evaluate any outcomes and impacts that the project may have achieved, evaluators should remember that the project's performance should be assessed by considering the difference between the answers to two simple questions "*what happened?*" and "*what would have happened anyway?*". These questions imply that there should be consideration of the baseline conditions and trends in relation to the intended project outcomes and impacts. In addition it implies that there should be plausible evidence to attribute such outcomes and impacts to the actions of the project.

Sometimes, adequate information on baseline conditions and trends is lacking. In such cases this should be clearly highlighted by the evaluator, along with any simplifying assumptions that were taken to enable the evaluator to make informed judgements about project performance.

3. Project Evaluation Parameters

A. Attainment of objectives and planned results:

The assessment of project results seeks to determine the extent to which the project objectives were achieved, or are expected to be achieved, and assess if the project has led to any other positive or negative consequences. While assessing a project's outcomes the evaluation will seek to determine the extent of achievement and shortcomings in reaching the project's objectives as stated in the project document and also indicate if there were any changes and whether those changes were approved. If the project did not establish a baseline (initial conditions), the evaluator should seek to estimate the baseline condition so that achievements and

results can be properly established (or simplifying assumptions used). Assessment of project outcomes should be a priority. Outcomes are the likely or achieved short-term and medium-term effects of an intervention's outputs. Examples of outcomes could include, but are not restricted to, stronger institutional capacities, higher public awareness (when leading to changes of behaviour), and transformed policy frameworks or markets. The evaluation should assess the extent to which the project's major relevant objectives were effectively and efficiently achieved or are expected to be achieved and their relevance.

- *Effectiveness:* Evaluate how, and to what extent, the stated project objectives have been met, taking into account the "achievement indicators" specified in the project document and logical framework². In particular, the analysis of outcomes achieved should include, *inter alia*, an assessment of whether and to what extent the results of this project have informed local, national, regional or international processes.
- *Relevance:* Evaluate the extent to which the Project Document was useful in defining the intervention logic and how useful was this in analysing outcomes achieved; and assess whether and to what extent the result of the project has informed local, national/regional/international processes. Ascertain the nature and significance of the contribution of the project outcomes to the wider portfolio of UNEP's DTIE and work plans for 2001 -2007.
- *Efficiency:* Cost-effectiveness assesses the achievement of the environmental and developmental objectives as well as the project's outputs in relation to the inputs, costs, and implementing time. Include an assessment of outcomes in relation to inputs, costs, and implementation times based on the following questions: Was the project cost-effective? Was the project the least cost option? Was the project implementation delayed and if it was, then did that affect cost-effectiveness? The evaluation should assess the contribution of cash and in-kind co-financing to project implementation and to what extent the project leveraged additional resources.

Specifically, the evaluation shall:

- Evaluate the outcomes of the project with regard to its role in assisting the six countries in reducing the emission of carbon dioxide by improving energy management practices, and identifying investments in the SMEs through a structured Cleaner Production approach.
- Whilst assessing project's attainment of objectives, the evaluator should review the annual Project Implementation Reviews (PIRs) and formulate an independent evaluation of the information described in these. Specifically, the evaluator shall collect information from project national stakeholders and report the volume of investments (in terms of USD) undertaken during project execution and relation to EE measures as a result of the direct intervention of the GEF project (GEF-4 Strategic Objective 2: promoting industrial energy efficiency).

² In case in the original or modified expected outcomes are merely outputs/inputs then the evaluator should assess if there were any real outcomes of the project and if yes then whether these are commensurate with the realistic expectations from such projects.

- The evaluator will also attempt to report the quantity of energy savings achieved as a result of direct intervention of the GEF project in terms of: tons of oil equivalent (toe); and/or Megawatt hours (MWh); and/or gigajoules (GJ) (whereby 1 toe = 11.630 MWh = 41.868 GJ). Please refer to Annex 6 for specific data requested.

B. Assessment of Sustainability of project outcomes:

Sustainability is understood as the probability of continued long-term project-derived outcomes and impacts after the UNEP project funding ends. The evaluation will identify and assess the key conditions or factors that are likely to contribute or undermine the persistence of benefits after the project ends. Some of these factors might be outcomes of the project, e.g. stronger institutional capacities or better informed decision-making. Other factors will include contextual circumstances or developments that are not outcomes of the project but that are relevant to the sustainability of outcomes. The evaluation should ascertain to what extent follow-up work has been initiated and how project outcomes will be sustained and enhanced over time. In this case, sustainability will be linked to the capacity built and the continued use and influence of the NCPCs interventions produced by the project which sustain the Governments' intentions to promote the application of technologies, practices and process that reduce or prevent emissions of greenhouse gases.

Four aspects of sustainability should be addressed: financial, socio-political, institutional frameworks and governance, and ecological (if applicable). The following questions provide guidance on the assessment of these aspects:

- *Financial resource:* To what extent are the outcomes of the project dependent on continued financial support? What is the likelihood that any required financial resources will be available to sustain the project outcomes/benefits once the UNEP assistance ends (resources can be from multiple sources, such as the public and private sectors, income generating activities, and market trends that support the project's objectives)?
- *Socio-political:* To what extent are the outcomes of the project dependent on socio-political factors? What is the likelihood that the level of stakeholder ownership will allow for the project outcomes/benefits to be sustained? Is there sufficient public / stakeholder awareness in support of the long term objectives of the project?
- *Institutional framework and governance.* To what extent are the outcomes of the project dependent on issues relating to institutional frameworks and governance? What is the likelihood that institutional and technical achievements, legal frameworks, policies and governance structures and processes will allow for, the project outcomes/benefits to be sustained? While responding to these questions consider if the required systems for accountability and transparency and the required technical know-how are in place.

As far as possible, also assess the potential longer-term impacts considering that the evaluation is taking place upon completion of the project and that longer term impact is expected to be seen in a few years time. Frame any recommendations to enhance future project impact in this context. Which will be the major 'channels' for longer term impact from the project at the national and international scales?

The evaluation should formulate recommendations that outline possible approaches and necessary actions to facilitate an impact assessment study in a few years time.

C. Replication and Catalytic role

The evaluation will also describe any catalytic or replication effect of the project. What examples are there of replication and catalytic outcomes that suggest increased likelihood of sustainability? Replication approach is defined as lessons and experiences coming out of the project that are replicated or scaled up in the design and implementation of other projects. Replication related to lessons and experiences replicated in different geographic area or scaling up which includes lessons and experiences are replicated within the same geographic area but funded by other sources. If no effects are identified, the evaluation will describe the catalytic or replication actions that the project carried out.

D. Achievement of outputs and activities:

Evaluate the delivered outputs: assessment of the project's success in producing each of the programmed outputs, both in quantity and quality as well as usefulness and timeliness.

Assess the soundness and effectiveness of the methodologies used for developing the local government's policy intervention plans.

Has the project:

- Supported the six NCPCs in acquiring technical knowledge on EE and its integration to CP?
- Supported the private sector in the six project countries in adopting and understanding EE methodologies?
- Supported and developed investment proposals for equipment with improvement EE amongst the participating enterprises?
- Developed and translated an Energy Audit manual adapted to the CP perspective?
- Established knowledge exchange networks these NCPC and the others not participating in this project?
- To what extent have the six governments's policy makers been sensitized in this EE-CP approach?
- How have the six project countries and others benefited as a direct/indirect result of this project?
- To what extent have the specific needs of the target groups of stakeholders been considered in the design process and the recommendations?

E. Assessment of Monitoring and Evaluation Systems:

- **M&E design.** Did the project have a sound M&E plan to monitor results and track progress towards achieving project objectives? The Terminal Evaluation will assess whether the project met the minimum requirements for project design of M&E and the application of the Project M&E plan (Minimum requirements are specified in Annex 5). The evaluation shall include an assessment of the quality, application and effectiveness of project monitoring

and evaluation plans and tools, including an assessment of risk management based on the assumptions and risks identified in the project document. The M&E plan should include a baseline (including data, methodology, etc.), SMART (see Annex 5) indicators and data analysis systems, and evaluation studies at specific times to assess results. The time frame for various M&E activities and standards for outputs should have been specified.

- **M&E plan implementation.** Was an M&E system in place and did it facilitate tracking of results and progress towards projects objectives throughout the project implementation period. Were Annual project reports complete, accurate and with well justified ratings? Was the information provided by the M&E system used during the project to improve project performance and to adapt to changing needs? Did the Projects have an M&E system in place with proper training for parties responsible for M&E activities to ensure data will continue to be collected and used after project closure?
- **Budgeting and Funding for M&E activities.** Were adequate budget provisions made for M&E made and were such resources made available in a timely fashion during implementation?
- **Long-term Monitoring.** Is long-term monitoring envisaged as an outcome of the project? If so, comment specifically on the relevance of such monitoring systems to sustaining project outcomes and how the monitoring effort will be sustained.

F. Assessment of processes that affected attainment of project results.

The evaluation will consider, but need not be limited to, consideration of the following issues that may have affected project implementation and attainment of project results:

- i. **Preparation and readiness.** Were the project's objectives and components clear, practicable and feasible within its timeframe? Were capacities of the executing institutions and counterparts properly considered when the project was designed? Were lessons from other relevant projects properly incorporated in design? Were the partnership arrangements properly identified and the roles and responsibilities negotiated prior to implementation? Were the availability of counterpart resources (funding, staff, and facilities), passage of enabling legislation, and adequate project management arrangements in place at project entry?
 - Ascertain to what extent the project implementation mechanisms outlined in the project document have been closely followed. In particular, assess the role of the various committees established and whether the project document was clear and realistic to enable effective and efficient implementation, whether the project was executed according to the plan and how well the management was able to adapt to changes during the life of the project to enable the implementation of the project.
 - Evaluate the effectiveness and efficiency and adaptability of project management and the supervision of project activities / project execution arrangements at all levels (1) policy decisions - Coordination Group; (2) day to day project management – task manager; (3) UNEP/DTIE guidance.
- ii. **Country ownership/Driverness.** This is the relevance of the project to national development and environmental agendas, recipient country

commitment, and regional and international agreements. Examples of possible evaluative questions include: Was the project design in-line with the national sectoral and the development priorities and plans? Are project outcomes contributing to national development priorities and plans? Were the relevant country representatives, from government and civil society, involved in the project? Have the governments committed resources? Did the recipient government maintain its financial commitment to the project? Have the government approved policies or regulatory frameworks been in-line with the project's objectives? Specifically the evaluation will:

- Assess the level of country ownership, and whether the project was effective in providing and communicating information and tools that assisted governments and other national stakeholders to support the development of the EE-CP integrated approach.

iii. **Stakeholder involvement.** Did the project involve the relevant stakeholders through information sharing, consultation and by seeking their participation in project's design, implementation, and monitoring and evaluation? For example, did the project implement appropriate outreach and public awareness activities? Did the project consult and make use of the skills, experience and knowledge of the appropriate government entities, NGOs, community groups, private sector, local governments and academic institutions in the design, implementation and evaluation of project activities? Were perspectives of those that would be affected by decisions, those that could affect the outcomes and those that could contribute information or other resources to the process taken into account while taking decisions? Were the relevant vulnerable and the powerful groups, the supporters and the opponents, of the processes properly involved? Specifically the evaluation will:

- Assess the mechanisms put in place by the project for identification and engagement of stakeholders in each participating country and establish, in consultation with the stakeholders, whether this mechanism was successful, and identify its strengths and weaknesses.
- Assess the degree and effectiveness of collaboration/interactions between the various project partners and institutions during the course of implementation of the project.
- Assess the degree and effectiveness of any various public awareness activities that were undertaken during the course of implementation of the project.

iv. **Financial planning.** Did the project have the appropriate financial controls, including reporting and planning, that allowed management to make informed decisions regarding the budget and allowed for timely flow of funds. Specifically, the evaluation should:

- Assess the strength and utility of financial controls, including reporting, and planning to allow the project management to make informed decisions regarding the budget and allow for a proper and timely flow of funds for the payment of satisfactory project deliverables throughout the project's lifetime.
- Present the major findings from the financial audit if one has been conducted.

- Did promised co-financing materialize? Identify and verify the sources of co-financing as well as leveraged and associated financing.
 - Assess whether the project has applied appropriate standards of due diligence in the management of funds and financial audits.
 - The evaluation should also include a breakdown of final actual project costs by activities compared to budget (variances), financial management (including disbursement issues), and co-financing. This information will be prepared by the relevant UNEP/DTIE project manager and UNEP/DGEF Fund Management Officer of the project for scrutiny by the evaluator.
- v. **UNEP Supervision and backstopping.** Did UNEP Agency staff identify problems in a timely fashion and accurately estimate its seriousness? Did UNEP staff provide quality support and advice to the project, approved modifications in time and restructure the project when needed? Did UNEP and Executing Agencies provide the right staffing levels, continuity, skill mix, frequency of field visits?
- vi. **Co-financing and Project Outcomes & Sustainability.** If there was a difference in the level of expected co-financing and actual co-financing, then what were the reasons for this? Did the extent of materialization of co-financing affect the project's outcomes and/or sustainability, and if it did affect outcomes and sustainability then in what ways and through what causal linkages?
- vii. **Delays and Project Outcomes & Sustainability.** If there were delays in project implementation and completion, the evaluation will summarise the reasons for them. Did delays affect the project's outcomes and/or sustainability, and if so in what ways and through what causal linkages?

The project shall be rated. *The ratings will be presented in the form of a table* with each of the categories rated separately and with **brief justifications for the rating** based on the findings of the main analysis. An overall rating for the project should also be given. The rating system to be applied is specified in Annex 1

4. Evaluation report format and review procedures

The report should be brief, to the point and easy to understand. It must explain; the purpose of the evaluation, exactly what was evaluated and the methods used. The report must highlight any methodological limitations, identify key concerns and present evidence-based findings, consequent conclusions, recommendations (for UNEP and other agencies) and lessons. The report should provide information on when the evaluation took place, the places visited, who was involved and be presented in a way that makes the information accessible and comprehensible. The report should include an executive summary that encapsulates the essence of the information contained in the report to facilitate dissemination and distillation of lessons.

Evidence, findings, conclusions and recommendations should be presented in a complete and balanced manner. The evaluation report shall be written in English, be of no more than 50 pages (excluding annexes), use numbered paragraphs and include:

- i) An **executive summary** (no more than 3 pages) providing a brief overview of the main conclusions and recommendations of the evaluation;

- ii) **Introduction and background** giving a brief overview of the evaluated project, for example, the objective and status of activities;
- iii) **Scope, objective and methods** presenting the evaluation's purpose, the evaluation criteria used and questions to be addressed;
- iv) **Project Performance and Impact** providing factual evidence relevant to the questions asked by the evaluator and interpretations of such evidence. This is the main substantive section of the report and should provide a commentary on all evaluation aspects (A – F above).
- v) **Conclusions and rating** of project implementation success giving the evaluator's concluding assessments and ratings of the project against given evaluation criteria and standards of performance. The conclusions should provide answers to questions about whether the project is considered good or bad, and whether the results are considered positive or negative;
- vi) **Lessons learned** presenting general conclusions, based on established good practices that have the potential for wider application and use. Lessons may also be derived from problems and mistakes. The context in which lessons may be applied should be clearly specified, and lessons should always state or imply some prescriptive action. A lesson should be written such that experiences derived from the project could be applied in other projects or at portfolio level;
- vii) **Recommendations** suggesting *actionable* proposals regarding improvements of the current project. They may cover, for example, resource allocation, financing, planning, implementation, and monitoring and evaluation. Recommendations should always be specific in terms of who would do what, provide a timeframe, and a measurable performance target. In general, Terminal Evaluations are likely to have very few (only two or three) actionable recommendations;
- viii) **Annexes** include Terms of Reference, questionnaires used, list of interviewees, documents reviewed, brief summary of the expertise of the evaluator / evaluation team, a summary of co-finance information etc. Dissident views or management responses to the evaluation findings may later be appended in an annex.

Examples of UNEP Terminal Evaluation Reports are available at www.unep.org/eou

Review of the Draft Evaluation Report

Draft reports submitted to UNEP EOU are shared with the relevant Programme or Project Manager and his or her supervisor for initial review and consultation. DTIE staff and senior Executing Agency staff are allowed to comment on the draft evaluation report. They may provide feedback on any errors of fact and may highlight the significance of such errors in any conclusions. The consultation also seeks agreement on the findings and recommendations. UNEP-EOU collates the review comments and provides them to the evaluators for their consideration in preparing the final version of the report.

All UNEP Evaluation Reports are subject to quality assessments by UNEP EOU. These include Evaluation quality assessment criteria and are used as a tool for providing structured feedback to the evaluator (see Annex 3).

5. Submission of Final Terminal Evaluation Reports.

The final report shall be submitted in electronic form in MS Word format and should be sent to the following persons:

Segbedzi Norgbey, Chief, Evaluation and Oversight Unit
UNEP, P.O. Box 30552-00100
Nairobi, Kenya
Tel.: (254-20) 7624181
Fax: (254-20) 7623158
Email: segbedzi.norgbey@unep.org

With a copy to:

Tom Hamlin, Climate Change Task manager
UNEP DGEF,
15 Rue de Milan, 75441 Paris, CEDEX 09, France
Tel: 0033-1-44371472
Fax: 0033-1-44371474
Email: Tom.Hamlin@unep.fr

Mark Radka, Energy Unit
UNEP DTIE,
15 Rue de Milan, 75441 Paris, CEDEX 09, France
Tel: 0033-1-44371427
Fax: 0033-1-44371474

The final evaluation report will be printed in hard copy and published on the Evaluation and Oversight Unit's web-site www.unep.org/eou. Subsequently, the report will be sent to the Executing agency and project focal points. In addition the final Evaluation report will be disseminated to: The relevant six Government representatives, the six NCPCs, UNEP-DTIE, UNEP-DGEF Professional Staff, and Technical Staff.

6. Resources and schedule of the evaluation

This terminal evaluation will be undertaken by an international evaluator contracted by the Evaluation and Oversight Unit, UNEP. The contract for the evaluator will begin on 2nd November 2007 and end on 4th February 2008 (40 days) spread over 14 weeks (26 days of travel, to: Vietnam, Beijing, Prague, Bratislava and Budapest, and 14 days desk study). The evaluator will submit a draft report by 5th December 2007 to UNEP/EOU, the UNEP/DTIE/DGEF Task Manager, and key representatives of the executing agencies. Any comments or responses to the draft report will be sent to UNEP / EOU for collation and the consultant will be advised of any necessary revisions. Comments to the final draft report will be sent to the consultant by 17th January 2008 after which, the consultant will submit the final report no later than 28th January 2007.

The evaluator will, after an initial telephone briefing with EOU and UNEP/DTIE/DGEF, travel to Czech Republic, Hungary, Slovak Republic, Vietnam, China and visit the Indian NCPC in New Delhi and meet with project stakeholders (NCPC directors) and the project coordinator at the beginning of the evaluation. The evaluator is also expected to meet with

representatives of the project intended users of the project's outputs (i.e. a number of industries).

In accordance with UNEP policy, all UNEP projects are evaluated by independent evaluators contracted as consultants by the EOU. The evaluator should have the following qualifications:

The evaluator should not have been associated with the design and implementation of the project. The evaluator will work under the overall supervision of the Chief, Evaluation and Oversight Unit, UNEP. The evaluator should have a sound background in Environmental Management with a thorough understanding of Environmental Efficiency Auditing and EMS. The consultant should have the following minimum qualifications: (i) Experience in environmental management and CP projects; (ii) experience with management and implementation of projects that generate knowledge and information; (iii) experience with project evaluation. Knowledge of UNEP programmes is desirable. Field experience in Asia and Eastern Europe is an advantage. Fluency in oral and written English is a must.

7. Schedule Of Payment

The consultant shall select one of the following two contract options.

Lump-Sum Option

The evaluator will receive an initial payment of 30% of the total amount due upon signature of the contract. A further 30% will be paid upon submission of the draft report. A final payment of 40% will be made upon satisfactory completion of work. The fee is payable under the individual Special Service Agreement (SSA) of the evaluator and IS **inclusive** of all expenses such as travel, accommodation and incidental expenses.

Fee-only Option

The evaluator will receive an initial payment of 40% of the total amount due upon signature of the contract. Final payment of 60% will be made upon satisfactory completion of work. The fee is payable under the individual SSAs of the evaluator and is NOT inclusive of all expenses such as travel, accommodation and incidental expenses. Ticket and DSA will be paid separately.

The consultant's choice of payment option will be specified in the signed contract with UNEP.

In case, the evaluator cannot provide the products in accordance with the TORs, the timeframe agreed, or his products are substandard, the payment to the evaluator could be withheld, until such a time the products are modified to meet UNEP's standard. In case the evaluator fails to submit a satisfactory final product to UNEP, the product prepared by the evaluator may not constitute the evaluation report.

Annex 1. OVERALL RATINGS TABLE

Criterion	Evaluator's Summary Comments	Evaluator's Rating
Attainment of project objectives and results (overall rating)		
Sub criteria (below)		
Effectiveness		
Relevance		
Efficiency		
Sustainability of Project outcomes (overall rating)		
Sub criteria (below)		
Financial		
Socio Political		
Institutional framework and governance		
Achievement of outputs and activities		
Monitoring and Evaluation (overall rating)		
Sub criteria (below)		
M&E Design		
M&E Plan Implementation (use for adaptive management)		
Budgeting and Funding for M&E activities		
Catalytic Role		
Preparation and readiness		
Country ownership / driveness		
Stakeholders involvement		
Financial planning		
UNEP Supervision and backstopping		
Overall Rating		

RATING OF PROJECT OBJECTIVES AND RESULTS

Highly Satisfactory (HS): The project had no shortcomings in the achievement of its objectives, in terms of relevance, effectiveness or efficiency.

Satisfactory (S): The project had minor shortcomings in the achievement of its objectives, in terms of relevance, effectiveness or efficiency.

Moderately Satisfactory (MS): The project had moderate shortcomings in the achievement of its objectives, in terms of relevance, effectiveness or efficiency.

Moderately Unsatisfactory (MU): The project had significant shortcomings in the achievement of its objectives, in terms of relevance, effectiveness or efficiency.

Unsatisfactory (U): The project had major shortcomings in the achievement of its objectives, in terms of relevance, effectiveness or efficiency.

Highly Unsatisfactory (HU): The project had severe shortcomings in the achievement of its objectives, in terms of relevance, effectiveness or efficiency.

Please note: Relevance and effectiveness will be considered as critical criteria. The overall rating of the project for achievement of objectives and results **may not be higher** than the lowest rating on either of these two criteria. Thus, to have an overall satisfactory rating for outcomes a project must have at least satisfactory ratings on both relevance and effectiveness.

RATINGS ON SUSTAINABILITY

A. Sustainability will be understood as the probability of continued long-term outcomes and impacts after the GEF project funding ends. The Terminal evaluation will identify and assess the key conditions or factors that are likely to contribute or undermine the persistence of benefits after the project ends. Some of these factors might be outcomes of the project, i.e. stronger institutional capacities, legal frameworks, socio-economic incentives /or public awareness. Other factors will include contextual circumstances or developments that are not outcomes of the project but that are relevant to the sustainability of outcomes..

Rating system for sustainability sub-criteria

On each of the dimensions of sustainability of the project outcomes will be rated as follows.

Likely (L): There are no risks affecting this dimension of sustainability.

Moderately Likely (ML). There are moderate risks that affect this dimension of sustainability.

Moderately Unlikely (MU): There are significant risks that affect this dimension of sustainability

Unlikely (U): There are severe risks that affect this dimension of sustainability.

All the risk dimensions of sustainability are critical. Therefore, overall rating for sustainability will not be higher than the rating of the dimension with lowest ratings. For example, if a project has an Unlikely rating in either of the dimensions then its overall rating cannot be higher than Unlikely, regardless of whether higher ratings in other dimensions of sustainability produce a higher average.

RATINGS OF PROJECT M&E

Monitoring is a continuing function that uses systematic collection of data on specified indicators to provide management and the main stakeholders of an ongoing project with indications of the extent of progress and achievement of objectives and progress in the use of allocated funds. Evaluation is the systematic and objective assessment of an on-going or completed project, its design, implementation and results. Project evaluation may involve the definition of appropriate standards, the examination of performance against those standards, and an assessment of actual and expected results.

The Project monitoring and evaluation system will be rated on ‘M&E Design’, ‘M&E Plan Implementation’ and ‘Budgeting and Funding for M&E activities’ as follows:

Highly Satisfactory (HS): There were no shortcomings in the project M&E system.

Satisfactory(S): There were minor shortcomings in the project M&E system.

Moderately Satisfactory (MS): There were moderate shortcomings in the project M&E system.

Moderately Unsatisfactory (MU): There were significant shortcomings in the project M&E system.

Unsatisfactory (U): There were major shortcomings in the project M&E system.

Highly Unsatisfactory (HU): The Project had no M&E system.

“M&E plan implementation” will be considered a critical parameter for the overall assessment of the M&E system. The overall rating for the M&E systems will not be higher than the rating on “M&E plan implementation.”

All other ratings will be on the GEF six point scale.

GEF Performance Description	Alternative description on the same scale
HS = Highly Satisfactory	Excellent
S = Satisfactory	Well above average
MS = Moderately Satisfactory	Average
MU = Moderately Unsatisfactory	Below Average
U = Unsatisfactory	Poor
HU = Highly Unsatisfactory	Very poor (Appalling)

Annex 3 - Review Of The Draft Report

Draft reports submitted to UNEP EOU are shared with the corresponding Programme or Project Officer and his or her supervisor for initial review and consultation. The DELC staff and senior Executing Agency staff provide comments on the draft evaluation report. They may provide feedback on any errors of fact and may highlight the significance of such errors in any conclusions. The consultation also seeks agreement on the findings and recommendations. UNEP EOU collates the review comments and provides them to the evaluators for their consideration in preparing the final version of the report. General comments on the draft report with respect to compliance with these TOR are shared with the reviewer.

Quality Assessment of the Evaluation Report

All UNEP Terminal Reports are subject to quality assessments by UNEP EOU. These are used as a tool for providing structured feedback to the evaluator.

The quality of the draft evaluation report is assessed and rated against the following criteria:

GEF Report Quality Criteria	UNEP EOU Assessment	Rating
A. Did the report present an assessment of relevant outcomes and achievement of project objectives in the context of the focal area program indicators if applicable?		
B. Was the report consistent and the evidence complete and convincing and were the ratings substantiated when used?		
C. Did the report present a sound assessment of sustainability of outcomes?		
D. Were the lessons and recommendations supported by the evidence presented?		
E. Did the report include the actual project costs (total and per activity) and actual co-financing used?		
F. Did the report include an assessment of the quality of the project M&E system and its use for project management?		
UNEP EOU additional Report Quality Criteria	UNEP EOU Assessment	Rating
G. Quality of the lessons: Were lessons readily applicable in other contexts? Did they suggest prescriptive action?		
H. Quality of the recommendations: Did recommendations specify the actions necessary to correct existing conditions or improve operations ('who?' 'what?' 'where?' 'when?'). Can they be implemented? Did the recommendations specify a goal and an associated performance indicator?		
I. Was the report well written? (clear English language and grammar)		
J. Did the report structure follow EOU guidelines, were all requested Annexes included?		
K. Were all evaluation aspects specified in the TORs adequately addressed?		
L. Was the report delivered in a timely manner		

Rating system for quality of terminal evaluation reports

A number rating 1-6 is used for each criterion: *Highly Satisfactory* = 6, *Satisfactory* = 5, *Moderately Satisfactory* = 4, *Moderately Unsatisfactory* = 3, *Unsatisfactory* = 2, *Highly Unsatisfactory* = 1, and *unable to assess* = 0.

Annex 5: GEF Minimum requirements for M&E

Minimum Requirement 1: Project Design of M&E³

All projects must include a concrete and fully budgeted monitoring and evaluation plan by the time of Work Program entry (full-sized projects) or CEO approval (medium-sized projects). This plan must contain at a minimum:

- SMART (see below) indicators for project implementation, or, if no indicators are identified, an alternative plan for monitoring that will deliver reliable and valid information to management
- SMART indicators for results (outcomes and, if applicable, impacts), and, where appropriate, corporate-level indicators
- A project baseline, with:
 - a description of the problem to address
 - indicator data
 - or, if major baseline indicators are not identified, an alternative plan for addressing this within one year of implementation
- An M&E Plan with identification of reviews and evaluations which will be undertaken, such as mid-term reviews or evaluations of activities
- An organizational setup and budgets for monitoring and evaluation.

Minimum Requirement 2: Application of Project M&E

- Project monitoring and supervision will include implementation of the M&E plan, comprising:

3

<http://gefweb.org/MonitoringandEvaluation/MEPoliciesProcedures/MEPTools/meptstandards.html>

- Use of SMART indicators for implementation (or provision of a reasonable explanation if not used)
- Use of SMART indicators for results (or provision of a reasonable explanation if not used)
- Fully established baseline for the project and data compiled to review progress
- Evaluations are undertaken as planned
- Operational organizational setup for M&E and budgets spent as planned.

SMART INDICATORS GEF projects and programs should monitor using relevant performance indicators. The monitoring system should be “SMART”:

1. **Specific:** The system captures the essence of the desired result by clearly and directly relating to achieving an objective, and only that objective.
2. **Measurable:** The monitoring system and its indicators are unambiguously specified so that all parties agree on what the system covers and there are practical ways to measure the indicators and results.
3. **Achievable and Attributable:** The system identifies what changes are anticipated as a result of the intervention and whether the result(s) are realistic. Attribution requires that changes in the targeted developmental issue can be linked to the intervention.
4. **Relevant and Realistic:** The system establishes levels of performance that are likely to be achieved in a practical manner, and that reflect the expectations of stakeholders.
5. **Time-bound, Timely, Trackable, and Targeted:** The system allows progress to be tracked in a cost-effective manner at desired frequency for a set period, with clear identification of the particular stakeholder group to be impacted by the project or program.

Annex 6: Energy Savings

The Project Coordinator and Task Manager may have differing opinions on the influence or may agree to the factors. The independent Evaluator should conduct a small survey amongst stakeholders to arrive at an averaged result:

Country or subproject	Investment	Annual MWh electric or GJ thermal	GHG emission reductions over life of plant	Causality or influence factor	Impact (GhG x influence factor)

Influence factors:

0%	No discernable or plausible positive influence
1% to 10 %	Positive attribution but other factors dominate
10 to 25%	Positive and supporting with timing consistent with decision to invest
25 to 50%	Fairly clear that there was influence
50 to 70 %	Attribution is that influence was good and increased the likelihood
70 to 90%	Project is attributed to have been a dominating influence whereas other factors were foreseen as probably minor.

Please note that 100 % causality does not exist and high influence is normally inappropriate given that there are always other factors influencing investment and there must be some baseline activity that can sustain activity after the intervention.

ANNEX IV: DETAILS OF RESULTS – MOU-I

A) Technical Achieved Results:1

Countries			Vietnam (7)	China	India	Hungary	Slovak	Cz	Totals
Number of Audits			7	10	10	7	7	4	45
Industrial Sector			Textile Industry	Light Industry	Textile	Public institute	Textile	Waste Management	
			Paper Industry	Chemical Industry	Textile	heavy industry	Pharmaceutical	Food	
			Textile Industry	Chemical Industry	Textile	Public	Bake House	Industry	
			Textile Industry	Light Industry	Chemical	transportation	Metal	Services	
			Textile Industry	Machinery	Service	Accommodation	Processing	Wood	
			Paper Industry	Manufacturing	Pulp & Paper	& recreation	Ceramics	Processing	
			Textile Industry	Building Materials	Power	Accommodation	Manufacturing		
	Chemical Industry	Generation	& recreation	Food Industry					
	Hotels Hotels	Fertilizer	Light industry	Food Industry, Hotel					
	Machinery	Cement	Heavy industry						
	Manufacturing	Food Processing							
No. & *Category of the <i>Identified</i> CP-EE measures	GH	47	20	46	4	4	7	128	
	PC	9	20	67	6	9	2	113	
	EM	9	20	59	4	22	1	115	
	EC	16	23	72	9	30	3	153	
	MC	2		21	1	2	0	26	
	RR	7	10	24	3	3	1	48	
Total No. of the identified CP-EE Measures		90	93	289	27	83	14	596	
No. & *Category of	GH	43	17	41	3	13		117	

Countries		Vietnam (7)	China	India	Hungary	Slovak	Cz	Totals
the <i>implemented</i> CP-EE measures	PC	9	10	41	1	5	N/A	66
	EM	7	17	36	N/a	10	1	71
	EC	10	14	28	5	10	1	68
	MC	2	1	10	N/a			13
	RR	6	3	14	1	1	1	26
Total No. of the implemented CP-EE Measures		77	62	170	10	39	3	361
Savings in	Electrical Energy (kWh/year)	22,278,883	1,835,439	29580580	2821030	374922	-421000	56,469,854
	Water (m3/year)		19,275.80	676050	N/a	6000	9173	
	Heat (Gcal/year)	4697.3	Steam 18,000 t/a	137214	2842.55	1869	3600	
	Fuel (m3/year)	FO: 406000 (Liter/year)/ Coal : 4697.3 ton/year	7,407.86	79922.5	105	65353	498000	
			Coal:					
			Coke:					
	Raw Material (kg/year)	N/a	591.5	319144	N/a	8000		

B) Environmental, Economic and Institutional Achieved Results:

Countries	Vietnam (7)	China (10)	India (10)	Hungary (7)	Slovak (7)	Cz (4)	Totals
Total Savings from the implemented measures (USD/year)	1714525.00	831609.00	2916068.00	130111.00	94095.00	23400.00	\$5,709,808
Total Investment from the implemented measures (USD)	428199.00	985609.00	5115952.00	352495.00	223790.00	62200.00	\$7,168,245
GHG Reduction from the Identified measures (ton/year)	29558.92	30,655.10	114389	1716.8	6532	341	183192.820
GHG Reduction from the implemented measures (ton/year)	20102.92	10431.80	71835.30	622.80	6564.00	341.00	109897.820
No. of professionals in the NCPC/CPC capable of conducting CP-EE audits.	8	4	40	2	5	3 (with additional external consultants)	59.000
No. of professionals in the NCPC/CPC capable of using the GHG indicator software.	3	6	40	2	4	2	57.000

GH Good House Keeping
 PC Process Control
 EM Equipment Modification
 EC Equipment Change
 MC Material Change
 RR Recycle/Reuse

A) Technical Achieved Results:

Countries			Vietnam (7)	China	India	Hungary	Slovak	Cz	Totals
Number of Audits			10	10	5	7	10		
Industrial Sectors	Construction material Industry	Construction material Industry							
	Textile Industry	Petrochemical industry							
	Food Processing Industry	Petrochemical industry					Building Industry Services		
	Construction material Industry	Petrochemical industry			DRUG AND PHARMA-SECONDARY STEEL-FORGING-FOUNDRY-PULP & PAPER		Surface Treatment		
	Textile Industry	Petrochemical industry				Printing Company	Agricultural Metal Working		
	Construction material Industry	Petrochemical industry cement					Wood Processing Services		
	Food Processing Industry	Mineral separation					Services Agricultural		
Paper Industry	Coal-fuel power								
No. & *Category of the Identified CP-EE measures	GH	57	138	195	2	8		400	
	PC	14	145	159	5	1		324	
	EM	36	56	92	0	9		193	
	EC	3	12	15	5	19		54	
	MC	1	7	8	2			18	
	RR	11	41	52	1	3		108	
Total No. of the identified CP-EE Measures			122	399	521	15	40		1097

Countries		Vietnam (7)	China	India	Hungary	Slovak	Cz	Totals
No. & *Category of the implemented CP-EE measures	GH	52	127	179	0	6		364
	PC	8	91	99	1	1		200
	EM	8	46	54	0	7		115
	EC	1	11	12	2	12		38
	MC	0	6	6	1			13
	RR	3	38	41	1	2		85
Total No. of the implemented CP-EE Measures		72	319	391	5	28		815
Savings in	Electrical Energy (kWh/year)	2,590,108	19,019,330	21609438	1736800			44,955,676
	Water (m3/year)	93200	1,830,570.00	1923770				
	Heat(Gcal/year)			0				
	Fuel (m3/year)	2971.5 Coal 18480 FO 28092 LPG						
	Raw Material (kg/year)							

B) Environmental, Economic and Institutional Achieved Results:

Countries	Vietnam	China	India	Hungary	Slovak	Cz	Totals
Total Savings from the implemented measures (USD/year)	172157.00	28212761.00	28384918	255501.00	167918.00		\$57,193,255
Total Investment from the implemented measures (USD)	111877.00	6199756.00	6311633	1708700.00	1584730.00		\$15,916,696
Average Payback Period of Investment (months)							
GHG Reduction from the Identified measures (ton/year)	9195.86	78,629.60	87825.46	4838	7609		188097.920
GHG Reduction from the implemented measures (ton/year)	3319.45	45633.00	48952.45	3240.00	7609.00		108753.900
No. of professionals in the NCPC/ CPC capable of conducting CP-EE audits.	8	9	40	2	5		64
No. of professionals in the NCPC/ CPC capable of using the GHG indicator software.	3	13	40	2	4		62

GH= Good Housekeeping
 PC= Process Control
 EM= Equipment modification
 EC= Equipment Change
 MC= Material Change

ANNEX-V : DETAILS OF RESULTS MOU-2

A) Technical Achieved Results:

Countries			Vietnam (7)	China	India	Hungary	Slovak	Cz	Totals
Number of Audits			10	10	5	7	10		
	Industrial Sectors		Construction material Industry Textile Industry Food Processing Industry Construction material Industry Textile Industry Construction material Industry Food Processing Industry Paper Industry Metal Finishing Industry	Petrochemical industry Petrochemical industry Petrochemical industry Petrochemical industry Petrochemical industry Petrochemical industry cement Mineral separation Coal-fuel power	DRUG AND PHARMA-SECONDARY STEEL-FORGING-FOUNDRY-PULP & PAPER	Printing Company	Building Industry Services Surface Treatment Agricultural Metal Working Wood Processing Services Agricultural		
No. & *Category of the Identified CP-EE measures		GH	57	138	195	2	8		400
		PC	14	145	159	5	1		324
		EM	36	56	92	0	9		193
		EC	3	12	15	5	19		54
		MC	1	7	8	2			18
		RR	11	41	52	1	3		108

Countries		Vietnam (7)	China	India	Hungary	Slovak	Cz	Totals
Total No. of the identified CP-EE Measures		122	399	521	15	40		1097
No. & *Category of the implemented CP-EE measures	GH	52	127	179	0	6		364
	PC	8	91	99	1	1		200
	EM	8	46	54	0	7		115
	EC	1	11	12	2	12		38
	MC	0	6	6	1			13
	RR	3	38	41	1	2		85
Total No. of the implemented CP-EE Measures		72	319	391	5	28		815
Savings in	Electrical Energy (kWh/year)	2,590,108	19,019,330	21609438	1736800			44,955,676
	Water (m3/year)	93200	1,830,570.00	1923770				
	Heat(Gcal/year)			0				
	Fuel (m3/year)	2971.5 Coal 18480 FO 28092 LPG						
	Raw Material (kg/year)							

B) Environmental, Economic and Institutional Achieved Results:

Countries	Vietnam	China	India	Hungary	Slovak	Cz	Totals
Total Savings from the implemented measures (USD/year)	172157.00	28212761.00	28384918	255501.00	167918.00		\$57,193,255
Total Investment from the implemented measures (USD)	111877.00	6199756.00	6311633	1708700.00	1584730.00		\$15,916,696
Average Payback Period of Investment (months)							
GHG Reduction from the Identified measures (ton/year)	9195.86	78,629.60	87825.46	4838	7609		188097.920
GHG Reduction from the implemented measures (ton/year)	3319.45	45633.00	48952.45	3240.00	7609.00		108753.900
No. of professionals in the NCPC/ CPC capable of conducting CP-EE audits.	8	9	40	2	5		64
No. of professionals in the NCPC/ CPC capable of using the GHG indicator software.	3	13	40	2	4		62

GH= Good Housekeeping
 PC= Process Control
 EM= Equipment modification
 EC= Equipment Change
 MC= Material Change
 RR= Recycle/Reuse

ANNEX VI: CO-FINANCING AND LEVERAGED RESOURCES

Co-financing (basic data to be supplied to the consultant for verification)

Table 1

Co financing (Type/Source)	IA own Financing (US\$)		Government (US\$)		Other*(Industry) (US\$)		Total (US\$)		Total Disbursement (US\$)	
	Planned	Actual	Planned	Actual	Planned	Actual	P l a n n e d	Act ual	Planned	Actual
- Grants										
- Loans/Concessio nal (compared to market rate)										
- Credits										
- Equity investments										
- In-kind support	175,000	175,000	600,000	582,000(**)	990,000	3,722,000 (***)			1,765,000	4,479,000
Other (*): - Total Investment from implemented measures (Industry)										
Totals	175,000	175,000	600,000	582,000	990,000	3,722,000			1,765,000	4,479,000

ANNEX VII: BRIEF EVALUATION OF THE ENERGY EFFICIENCY MANUAL DEVELOPED BY UNEP-DTIE

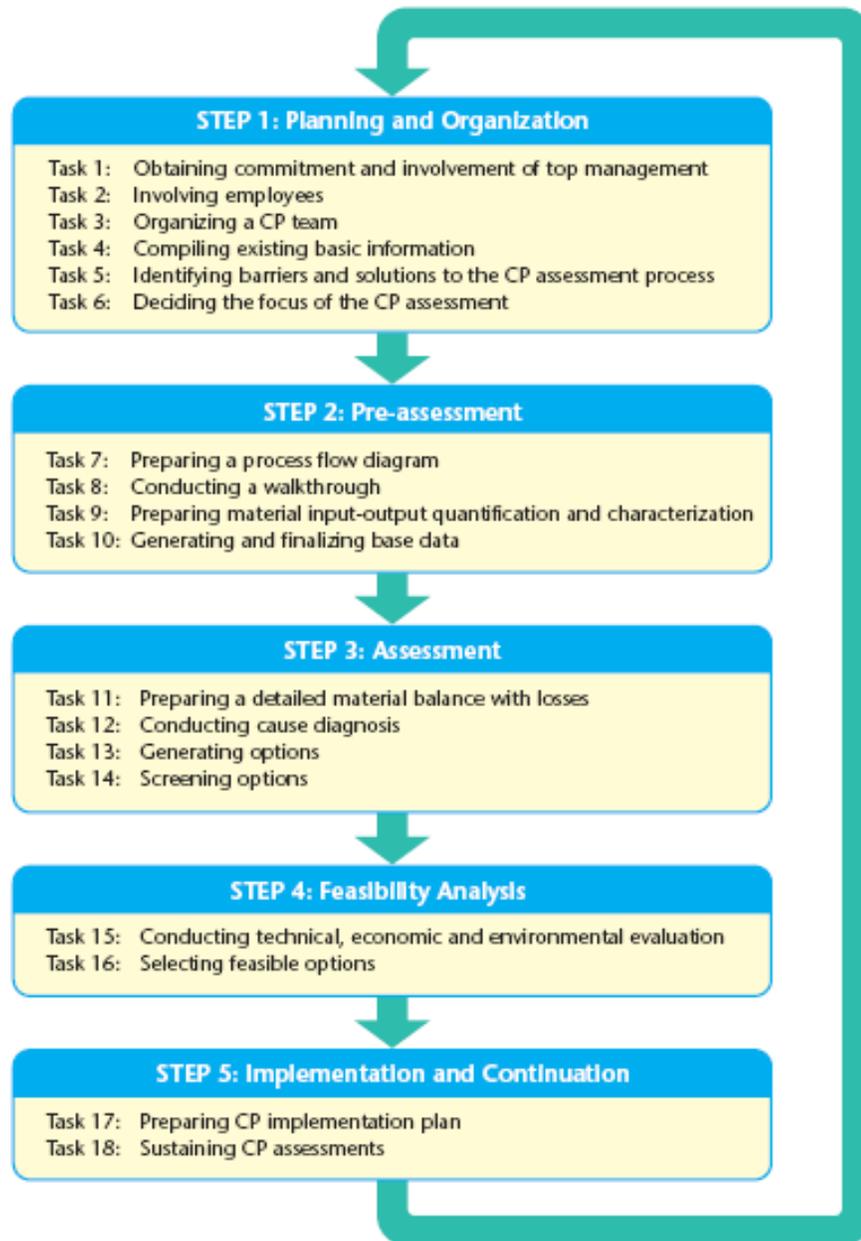
- The Draft Energy Efficiency Manual was developed by National Productivity Council (NPC) of India and used by NCPCs in the six project participating countries: Hungary, Slovak Republic, Czech Republic, China , Vietnam and India for conducting EE-CP audits and capacity building activities in participating SME units.
- The Manual presents an integrated Cleaner Production–Energy Efficiency (CP-EE) methodology based on the proven CP framework and combines this with factual information, technical data, worksheets, and tools and resources that allow both technical specialists and managers to take direct and effective action.

Structure of the Manual :

- **Part 1** : CP-EE Methodology -The first two chapters lay the foundations of the CP-EE assessment methodology

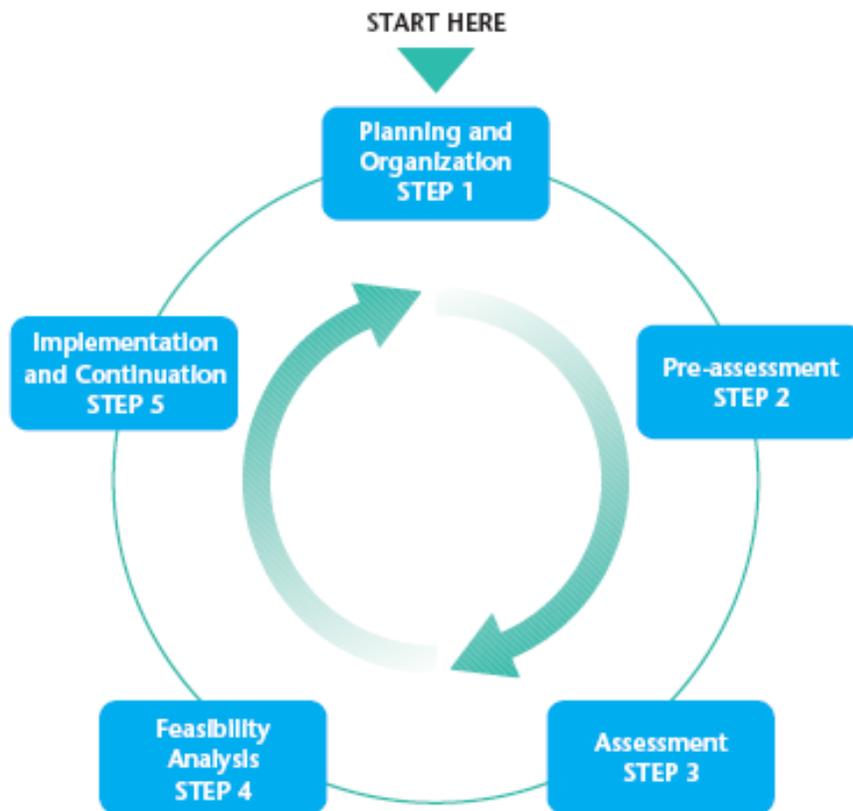
Chapter 1: introduces the benefits of integrating CP and EE and of producing a CP-EE methodology. Snap shots are provided along side the text to make the manual easy to read and understand through examples.

Chapter 2: provides a full explanation of the five steps that make up the CP methodology.

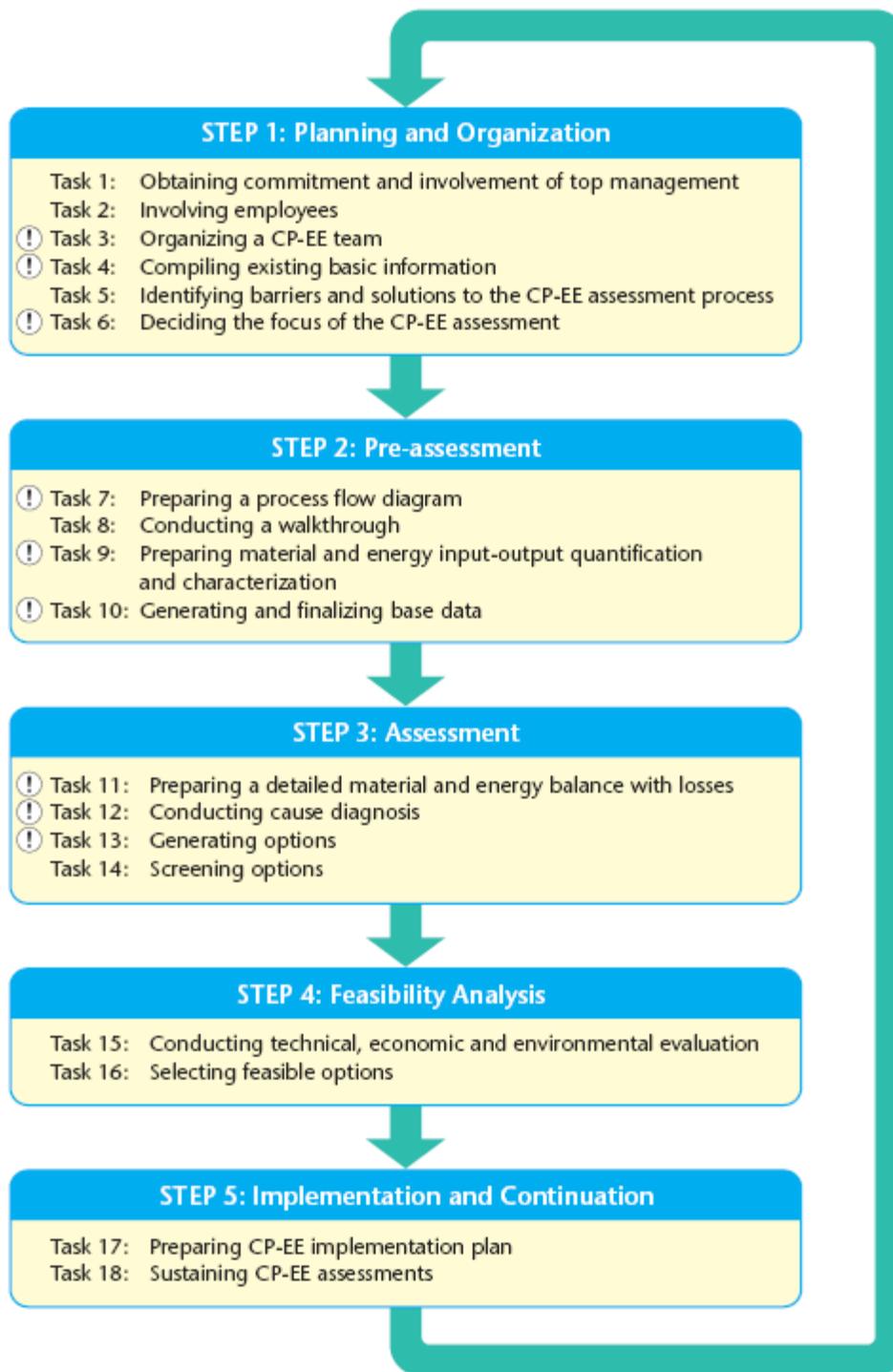


Readers are then ‘walked through’ the tasks that comprise each step.

The importance of integrating EE and CP methodology is highlighted through a step wise schematic diagram



Explanations are provided for each step.



These simple and easy to follow explanations are accompanied by a ‘Running Example’ in the form of Completed Worksheets taken from the actual CP-EE assessment of a textile processing house in India.

Moreover, blank Worksheets are provided allowing users to adapt them to their own purposes

Chapter 3: presents the full Case Study of the textile firm used for the Running Example in Chapter 2.

- **Part 2 : Technical Modules**

Module 1 : provides background information on different energy-using systems (thermal and electrical), information that can be helpful in identifying areas of focus for CP-EE assessments. It also includes worksheets that can be used during assessment.

Module 2 : presents Energy Efficient Technologies.

- **Part 3 : Tools & Resources**

It provides tools and resources for everyday use, including: checklists (of procedures that improve energy efficiency and safety in energy-using equipment); thumb rules (for rapid assessment of the efficiency of major energy systems); a summary of different types of measuring instruments; links to sources of information on the Internet; conversion tables (equating SI, metric and other units); and a summary of acronyms and abbreviations used throughout the Manual.

An additional feature of Part 3 is UNEP's 'GHG Indicator'—a spreadsheet based calculator that allows users to compute the greenhouse gas (GHG) emissions from their facilities.

Evaluation Comment

It is a very comprehensive, easy to understand and use manual that can be practically used by SMEs to conduct self-audits and prepare programs for implementation of EE-CP measures.

ANNEX VIII: BRIEF PROFILE OF THE EVALUATOR: DR NAVAL KARRIR

Date of Birth: 3rd October 1962

Nationality: Indian

Dr. Naval Karrir is a mechanical engineer with MBA, M Tech & a PhD from IIT Delhi. He has worked in Public, Private, Government and NGO sectors for more than 23 years. Presently he is Consultant to World Bank and also President, Sustainability Synergies, leading the firm resources in the field of infrastructure development, capacity building, management solutions, energy & environment and sustainable development. In his last assignment, he was Director with Deloitte, the International Consulting firm.

In the field of energy & environment Dr. Naval has developed & implemented projects on energy efficiency & technology upgradation leading to environment protection (including CDM) in various sectors of Indian economy as industrial, commercial, power, transport, agriculture etc. with financing from World Bank, UNDP, UNEP, UNIDO, GTZ Germany, NEDOs Japan and the USAID.

Currently he is involved with developing & implementing Energy Efficiency/Cleaner Production /CDM projects in SMEs in sectors including steel, brass, pottery & ceramics, automobiles and textiles.

He has been part of various governmental committees in the field of energy & environment

Dr. Naval has been associated with various management institutes as a visiting faculty in the field of management, energy & environment, sustainable development and infrastructure development.

Dr. Naval has also presented papers both at national & international levels on the foresaid subjects.

Education: B. Tech, Mech (Hons.), M.Tech, MBA, PhD (IIT Delhi)

Employment Record:

July 2005 – onwards	President, Sustainability Synergies & Consultant WBank
Aug 2003- June 2005 :	Director, Deloitte Touche Tohmatsu (Deloitte.)
Dec 2001 – July 2003 :	Tata Energy Research Institute (TERI)
Dec 1995- Nov 2001 :	PCRA , Ministry of Petroleum & Natural Gas
Nov1984- Nov1995 :	Hindustan Petroleum Corporation Ltd.(HPCL)
April 1984- Oct 1984 :	Indian Sugar & General Engineering Corporation (ISGEC)