Independent Mid Term Evaluation of the UNIDO Project:

Project Number: GFC/CMB/11/001

REDUCE GREEN HOUSE GAS EMISSION THROUGH IMPROVING ENERGY EFFICIENCY IN INDUSTRIAL SECTOR IN CAMBODIA

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With support from Dr. Sokneang In
National Evaluation Consultant in Cambodia

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Executive summary

Contracted by UNIDO, an independent Mid Term Evaluation of the UNIDO Project GFC/CMB/11/001 "**REDUCE GREEN HOUSE GAS EMISSION THROUGH IMPROVING ENERGY EFFICIENCY IN INDUSTRIAL SECTOR IN CAMBODIA** has been carried out by Prof. Dr. Hans Schnitzer. He has been supported by Dr. Sokneang In, the National Evaluation Consultant in Cambodia. The evaluation has been carried out between July 15 and September 15, 2013, with a visit to Cambodia from August 5 to 15.

The purpose of the mid-term evaluation was to:
a) review
- project advances to the achievement of projected GHG mitigation.
- the activities and project results and achievements through their indicators.
- the relevance of objectives and other design elements of the project.

(b) propose recommendations that would increase efficiency and effectiveness of project activities.
(c) draw lessons learned in the process to replicate the experience in other projects

for GEFand UNIDO.

The evaluation is based on:

1. A review of project documents, including: The original project document, monitoring reports, reports of case studies, action plans, training plans other related materials prepared by the project.
2. Counterfactual information: In cases where the background information for the benchmarks is not available the evaluation team aimed at establishing a baseline approach through recall and secondary information.
3. Interviews with the Project Management Unit (PMU), personnel associated with project management, partner country focal points, project beneficiaries, and other surveys, reviews of documents deemed necessary by the evaluation team.
4. Interviews with representatives of ministries, branch organizations and research institutions.
5. On-site observation of results achieved in demonstration projects, including interviews of actual and potential beneficiaries of improved methods, practices and/or technologies.

The objective of the project is to improve the energy efficiency of Cambodia's industrial sector, leading to reduce global environmental impact from greenhouse gas emissions and enhanced competitiveness for industrial sector in a country with an energy deficit. Demonstration of Industrial Energy Efficiency (IEE) benefits, capacity building, institutional strengthening, up-scaling of implementation for IEE and Climate Change mitigation in Cambodian manufacturing sector is a major element of this project.
For climate change mitigation in industries, project will co-ordinate with Climate Change Department (CCD) under Ministry of Environment (MOE).

The project is going to:

- provide technical support to Ministry of Industry, Mines & Energy (MIME) to develop and help establish market oriented policy and regulatory instruments needed to support sustainable progression of Cambodian industries towards international best achievable energy performance and to stimulate the creation of a market for industrial energy efficiency (IEE) products and services.
- provide part financial assistance for implementation of technology options to participating units which has committed co-financing of identified techno-economical IEE measures.

- build knowledge and in-depth technical capacity for IEE, for focusing on energy management and system optimization, between enterprises, industry and energy efficiency professional and relevant institutions.
- provide investments-specific technical assistance, including financial engineering studies and project financing, to support the development and implementation of a limited number of pilot IEE projects with high replication or energy saving potential in key sectors of Cambodian industries food processing, garments, rubber processing, rice processing and brick Kilns.

The actual implementation of the project is governed by annual work plans which prepared by the Project Management Unit (PMU) and NCPO-C in collaboration with a Project Management Unit (CTA) and UNIDO project manager, for endorsement by the Project Advisory Committee (PAC). The duration of the project is 4 year (2010-2014) starting from November-2010. The total budget of the project is **4,674,000 USD** which is contributed from UNIDO (100,000 USD), GEF 1,240,000 USD, support cost on GEF contribution (10%) 124,000 and from several counterparts: Cambodian Government 150,000 USD, NCPO-Cambodia 140,000 USD, Private Sector 90,000 USD and Private sector (Cash committed 2,830,000 USD).

Interviews during the visit have been done with:

- Management and employees of the National Cleaner Production Office
- Representatives of Ministries (Ministry of Industry, Mines and Energy; Department of Industrial Techniques; Ministry of Environment)
- Company owners and COEs (Norm Rice Mill; FaFa Group; LYLY Food Industry, Sky High, POP Ice Company, SunRise Brick Company)
- Branch Organizations (Phnom Penh Small and Medium Industry Association, Garment Manufacturing Association of Cambodia)
- Science (Deputy Director of Environmental Department, Royal University of PhnomPenh)

At the first day, we partially joined a training given by the NCPO to representatives from the provinces in Cambodia.

The project is already implemented as industry energy efficiency in 12 demo-units and 40 units identified as quick scan from 5 selected sectors, in which 9 pilot demo projects and 15 quick scan projects are at advance stage of implementation viz, technology scooping, selection of techno-economically solutions and implementation of selected solutions. Based on benchmarking studies, energy audits and implementation of IEE measures from 2009-2012. GHG emission reduction potential from 5 energy intensive sectors has been worked out to be:

- 261.370 t/year (20% reduction based on generic EE measures)
- 417,505 t/year (30% based on EE technology related measures)
- 709,445 t/year (60-70% application of renewable energy measures)

In collaboration with provincial department of Industry, Mines and Energy, 13 clinics were organized in 11 provinces attended by over 300 industry decision maker in 2011 and 5 IEE clinics were organized in Steung Treng, Kampong Cham, Siem Reap and Kampong Thom provinces. As the result, the total number of participants from 5 selected sectors attended in the 5 IEE clinic was 144 CEO/Owners. Intensive training modules 3 in 2012 and 2 in 2013 were conducted for capacity building in class room followed by on the job training by more than 80 participants (*NCPO-C, 2011, 2012*[1]).

The representatives from government and branch organizations highly appreciated the work of the NCPO and especially the studies done in this project. They underlined the great importance

[1] NCPO-C, 2011, 2012: Annual report 2012. Ministry of Industry, Mine and Energy, National Cleaner Production Office- Cambodia.

of energy issues to the economic development of Cambodia and they expect a better situation for the exporting industry on the world market. They all mentioned that electricity prices in Cambodia are much higher than in the surrounding countries and that electricity supply is unstable outside the capital, posing problems to the competitiveness on the export market. Cambodia has almost no own fossil energy resources and few possibilities of hydro power. Biomass and wind are not developed in a large scale, so the main source for electricity are diesel motors. The project fits very well with the national plans regarding environment, energy and economic development. Some representatives proposed the extension of the activities to a National Research Centre on Green Energy (green electricity, waste to energy, use of rice straw, sustainable wood management, …). An extension to other sectors (e.g. printing, tourism) would be appreciated.

NCPO used a variety of ways to contact the companies for the Business Case Studies. There is an ongoing cooperation with some of them. Others have been actively approached through their branch organizations. Some by direct contact through one of the two sides. The analysis of the Business Case Study reports and visits to the companies showed that many option proposed in the case studies have been put into realization. All companies claim that ideas for new technologies for equipment and machinery came from both sides, but in general the NCPO comes up with more options and is the driving partner. The NCPO is following up the achievements and savings in GHG-emissions. In some cases the wood gasifiers have stopped working. Discussions showed that the quality of the equipment was not as expected and/or the maintenance was poor. All companies showed a certain readiness to pay for the project, but not for consultation or studies but only for real savings. Some companies would like to see the energy issues being imbedded into a general improvement of the productivity.

From the study of the materials and the contact with actors it can be said that:

- NCPO is well known at the institutions visited and well esteemed. All people contacted knew about the project or were involved.
- The timeline of the activities is carefully followed up be the NCPO and it is highly probable that the project can reach its goal within the time scheduled and the budget available.
- The companies were satisfied with the technological options and their economic performance. All companies are interested to keep the cooperation going.
- All case studies are documented in company specific reports (at the time of the visit in English, but also planned in Khmer).

From the Universities, a closer cooperation has been suggested. Several ways are possible, like internships, service learning and joint theses.

I. Evaluation objectives, methodology and process

- Information on the evaluation: why, when, by whom, etc.
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Project general information:

Project Name:	Reducing Greenhouse Gas Emissions through Improved Energy Efficiency in the Industrial Sector
Project's GEF ID Number:	**3976**
GEF Agency Project ID	**GF/CMB/002/1101-2010**
Countries:	**Cambodia**
GEF Focal Area and Operational Program:	**GEF FOCAL AREA:** Climate Change **GEF-4 STRATEGIC PROGRAM:** CC-SP2
Agency:	**UNIDO**
Other Cooperating Agencies:	Cambodia Cleaner Production Office (hosted by the Ministry of Industry, Mines & Energy (MIME))
Project Approval Date:	**July, 2010**
Date of Project Effectiveness:	**November, 2010**
Projet duration:	**Four years**
Total Project Cost:	**US $ 4,670,000**
GEF Grant Amount:	**USD 1,240,000 + 124,000 (support cost)**
GEF Project Preparation Grant Amount (if any):	**US$ 60,000 +6,000 (support cost)**

Scope and objectives of the evaluation, main questions to be addressed

The purpose of the mid-term evaluation was to:

a) review

- Project advances to the achievement of projected GHG mitigation.
- The activities and project results and achievements through their indicators.
- The relevance of objectives and other design elements of the project.

(b) propose recommendations that would increase efficiency and effectiveness of project activities.

(c) draw lessons learned in the process to replicate the experience in other projects

for GEF and UNIDO.

Information sources and availability of information

The report is based on:

1. A review of project documents, including: The original project document, monitoring reports, reports of case studies, action plans, training plans other related materials prepared by the project.
2. Counterfactual information: In cases where the background information for the benchmarks is not available the evaluation team aimed at establishing a baseline approach through recall and secondary information.
3. Interviews with the Project Management Unit (PMU), personnel associated with project management, partner country focal points, project beneficiaries, and other surveys, reviews of documents deemed necessary by the evaluation team.
4. Interviews with representatives of ministries, branch organizations and research institutions.
5. On-site observation of results achieved in demonstration projects, including interviews of actual and potential beneficiaries of improved methods, practices and/or technologies.

The visiting program has been prepared and organized by a national evaluation consultant Dr. Sokneang In. The preparation of the visit in Cambodia has been perfectly done!

The agenda is given in ANNEX B. Due to the risk of political demonstrations during the announcement of the results of the national elections; I left the capital during the weekend.

Methodological remarks, limitations encountered and validity of the findings

The visiting program and the interview partners have been selected by the national evaluation consultant in cooperation with the NCP-Office in Phnom Penh. It can be expected, that the most successful company projects have been selected for the visits.

No other interviews and background research has been made.

II. Countries and project background

Brief countries context: an overview of the economy, the environment, institutional development, demographic and other data of relevance to the project

Cambodia is situated in the fast growing region of south-East-Asia and classified as least developed country (LDC). In Cambodia, 76% has not access to the electricity (around 10.1 million at the rural areas and 1.1 million at the urban) and only 24% of the total population has access to electricity (60% in urban and 10% in rural areas) (*UNIDO-NPO-C, 2013*[2]*, NIS, 2011*[3]).

After climbing to an all time record of 13.4 percent in 2005, growth of real GDP slowed to 10.4 percent in 2006 and was pegged at 9.6 percent in 2007. Since 2004, garments, construction, agriculture, and tourism have driven Cambodia's growth. During the decade ending 2007, Cambodia doubled the per capita GDP to US$589 which is expected to reach to US$1,000 by 2015, possibly even earlier when oil and gas production comes on stream and GDP climbed more than 6% per year between 2010 and 2012 (NIS, 2011[3]; JNEIDO, 2011[4]; CDRI, 2012[5]).

The key contribution of industry's growth came from construction and mining activities, as well as the exports of textiles and garments. The textile and garment sub sector, which accounts for nearly half of the value added of the industrial sector, grew at a slower pace. Rice sector is growing fast and Cambodia from 2009 onward is a net exporter of rice and is expected to double its production and processing in next 5 years. Important contributions for the strong economic performance in recent years came from steady growth in agriculture and forestry (40 percent), sustained growth of tourism receipts (10.2 percent), the continued growth in garment exports (10 percent which was effected by global recession in 2008-9) and the continued expansion of financial services (22.2 percent) and construction activities (4.3 percent). Reliance on these industries means that sustainable management of natural resources and other aspects of the environment are vital for improving rural livelihoods and for economic growth (*CDRI, 2012*[5]*; NIS 2011*[3]).

The growth of agriculture sector is highly dependent on climatic conditions which keep fluctuating year to year. Rice production accounts for over 10 percent of GDP and have significant potential to improve its share by fast increasing exports and specializing in organic rice production to create more value of their product. Recently launched policy of paddy production and rice export by NSEC July 2010 and announced by Prime Minister Hun Sen to increase share of Rice production and export to 20% in country GDP.

The legal framework for environment in Cambodia is at present largely based on laws established in last 15 years. It is now in a period of very rapid change as new laws, which have been under development since the beginning of the fourth mandate of the present government, are coming into force or are in the final stages of development. Laws, Sub-Decrees, and guidelines governing land tenure, decentralized local government, forestry, concession management, community forestry, fisheries management, environmental impact assessment, protected areas management (PAM), and biodiversity conservation, climate change convention, have been enacted in the past three years or are likely to be enacted within the year. The following statement presents some key pieces of legislation and regulation, presented according to responsible of the Royal Government of Cambodia (RGC).

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[2] UNIDO-NCPO-C, 20013: Report on National Strategy for Enhancing Conversion of Waste Agricultural Biomass into Energy in Cambodia. 08/2013, Phnom Penh, Cambodia.

[3] NIS, 2011: National Institute of Statistic. Statistical Year book 2011

[4] JNEIDO, 2011 (Japan's New Energy and Industrial Development Organization): Possibility of Smart Community Development in Cambodia's South Economic Corridor Industrial Zones

[5] CDRI, 2012: Cambodia in 2012: Key trends and policy priorities from the Cambodia outlook conference.

Sector-specific issues of concern to the project and important developments during the project implementation period

Cambodia has indication of deposits of energy natural resources such as fossil fuels, natural gas and coal, and over 84% of the primary energy consumption is contributed by fuel wood. Less than 9% of rural households have access to a grid-quality electricity services. Those who depend mainly on rechargeable batteries and small diesel-fueled isolated generation have paid with very high unit prices for electricity.

The Royal Government of Cambodia has formulated an energy sector development policy in October 1994. Its objectives are (JNEIDO, 2011[6]; CESS, undated[7]):

- to provide an adequate supply of energy throughout Cambodia at reasonable and affordable price,
- to ensure a reliable, secure electricity supply at prices, which facilitate investment
- in Cambodia and development of the national economy,
- to encourage exploration and environmentally and socially acceptable development of energy resources needed for supply to all sectors of the
- Cambodian economy, to encourage efficient use of energy and to minimize detrimental environmental effects resulting from energy supply and use.

The current project is focused on potential energy savings and GHG emission reduction in energy intensive on 5 industrial sectors: Garment, Rice milling, Rubber refining, Brick kilns and Food and Beverage (proposed during consultation workshop) sector in Cambodia. The project also seeks to address many of the existing barriers as mentioned above to industrial energy efficiency (IEE), to deliver measurable results and to make an impact on how Cambodian industry manages and uses energy through an integrated approach that combines technical and financial assistance in implementation of IEE pilot projects in selected enterprises (who has committed for co-financing) substantial capacity building with technical assistance interventions at the policy, Energy efficiency standards, energy auditor accreditation and scale-up activities of IEE achievements through pilot demonstration (*Project report*).

The most constraining factor to manufacturing firm development (Bailey, 2009[8]), was the cost as well as availability of electricity. The high cost of electricity is due to a function of Government and infrastructure inefficiency. Generally business people were aware of the comparable prices paid for power in neighboring countries and at the border where electricity was imported to Cambodia (almost half the price paid in Phnom Penh). A significant share of the electricity used in Phnom Penh, about 95 percent in 2007, is generated from diesel power plants. There is no national grid or high voltage transmission system which leads to large losses during transmission and distribution. Energy cost specifically electricity cost constrain business development in Cambodia is the high use of generator electricity and the lack of electricity-intensive industry in the country. According to the World Bank, 36.2 percent of electricity in the manufacturing sector comes from the generators (*World Bank 2009[9]; JNEIDO, 2011[6]*).

Manufacturing Industries consume large amounts of diesel and fuel oil and certain industries such as the garment, food processing and brick works also consumes large amounts of fuel wood that contributes to deforestation (*NIS, 2011[3]*). The mitigation options proposed in National communication-2 (NC-2) include energy efficiency reducing emissions by about 20% and technology change that can reduce emissions about 40% for some even up to 70% for instance for rice mills using rice husk gasification technology or with combined heat and

[6] JNEIDO, 2011 (Japan's New Energy and Industrial Development Organization): Possibility of Smart Community Development in Cambodia's South Economic Corridor Industrial Zones.

[7] CESS: Cambodia Energy Sector Strategy, draft report, undated

[8] Bailey ,2009 : Cambodia's Investment Climate : Macroeconomic Environment and Perception of Manufacturing Firms, 2009

[9] World Bank, 2009: Improved Energy Technologies for Rural Areas, Phnom Penh, Cambodia

power generation or co-generation using other sustainable biomass sources.

Important developments during the project implementation period
The project is already implemented as industry energy efficiency in 12 demo-units and 40 units identified as quick scan from five selected sectors, in which nine pilot demo projects and 15 quick scan projects are at advance stage of implementation viz, technology scooping, selection of techno-economically solutions and implementation of selected solutions. Based on benchmarking studies, energy audits and implementation of IEE measures from 2009-2012 GHG emission reduction potential from five energy intensive sectors has been worked out to be:

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Project summary:

The objective of the project is to improve the energy efficiency of Cambodia's industrial sector, leading to reduce global environmental impact from greenhouse gas emissions and enhanced competitiveness for industrial sector in a country with an energy deficit (*project report*[10]).

Demonstration of Industrial Energy Efficiency (IEE) benefits, capacity building, institutional strengthening, up-scaling of implementation for IEE and Climate Change mitigation in Cambodian manufacturing sector is a major element of this project. Initially the directly involved partners will be given priority for IEE capacity building and implementation support but gradually other government agencies and the broader society will profit from increasing attention.
For climate change mitigation in industries, project will co-ordinate with Climate Change Department (CCD) under Ministry of Environment (MOE).

The project is going to:

- provide technical support to Ministry of Industry, Mines & Energy (MIME) to develop and help establish market oriented policy and regulatory instruments needed to support sustainable progression of Cambodian industries towards international best achievable energy performance and to stimulate the creation of a market for industrialenergy efficiency (IEE) products and services.
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- build knowledge and in-depth technical capacity for IEE, for focusing on energy management and system optimization, between enterprises, industry and energy efficiency professional and relevant institutions.-
- provide investments-specific technical assistance, including financial engineering studies and project financing, to support the development and implementation of a limited number of pilot IEE projects with high replication or energy saving potential in key sectors of Cambodian industries food processing, garments, rubber processing, rice processing and brick Kilns.

[10] NCPO-C, 2012: Annual report 2012. Ministry of Industry, Mine and Energy, National Cleaner Production Office- Cambodia.

The actual implementation of the project is governed by annual work plans which prepared by the Project Management Unit (PMU) and NCPO-C in collaboration with a Project Management Unit (CTA) and UNIDO project manager, for endorsement by the Project Advisory Committee (PAC). The duration of the project is 4 year (2010-2014) starting from November-2010. The total budget of the project is **4,674,000 USD** which is contributed from UNIDO (100,000 USD), GEF 1,240,000 USD, support cost on GEF contribution (10%) 124,000 and from several counterparts, Cambodian Government 150,000 USD, NCPO-Cambodia 140,000 USD, Private Sector 90,000 USD and Private sector (Cash committed 2,830,000 USD).

The timeline of the activities is given in ANNEX C

Brief description including history and previous cooperation

UNIDO is one of the Global Environmental Facility (GEF) implementing agencies having comparative advantage in the development and implementation of Industrial Energy Efficiency (IEE) projects. UNIDO received formal request from the Ministry of Environment (MOE) of Kingdom of Cambodia to assist in the development and implementation of a GEF Climate Change project on Industrial Energy Efficiency. Since 1994, UNEP and UNIDO have established and supported **National Cleaner Production Centres / Programmes** (NCPCs/NCPPs) in developing countries and economies in transition to build local capacity to implement Cleaner Production and to provide core CP services at the national level. The National Cleaner Production Office-Cambodia (NCPO-C) started as Cambodian Cleaner Production Programme (CCPP) in 2004 with financial support from State Secretariat for Economic Affairs (SECO), executed by UNIDO.

UNIDO has long–standing experience in the development and implementation of industrial energy efficiency and resource efficient technologies in developing countries and emerging economies. It has strong understanding of how policy, normative, technical, market and financial variables can affect energy efficiency in manufacturing and process industries. In recent years UNIDO has built on and strengthen such expertise by incorporating in its approach to IEE the promotion and introduction of energy management systems and standards as principal tool to integrate energy efficiency in the manufacturing sector corporate practices. UNIDO is internationally recognized as leading advocate and technical assistance provider for IEE policies, industrial energy system optimization and energy management system/standards.

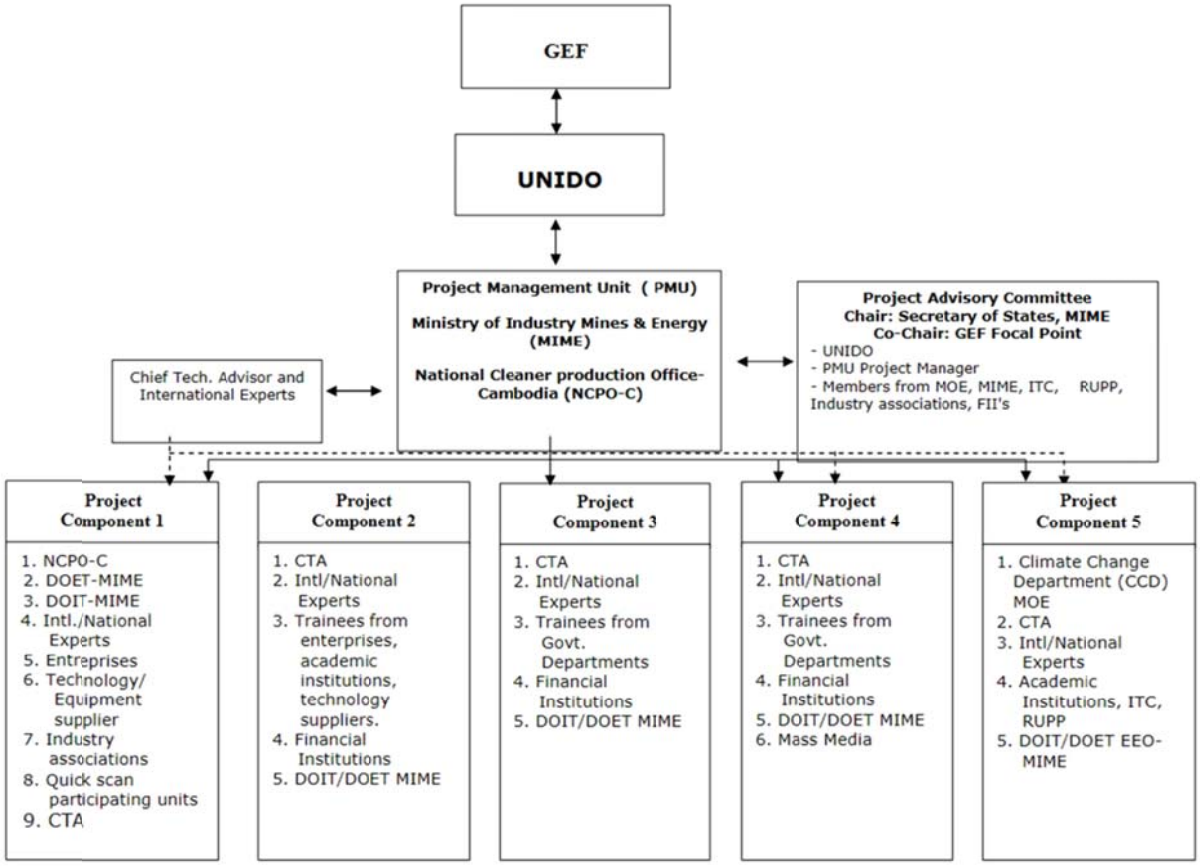
The projects at NCPO-C:

- SECO-UNIDO: Cleaner production: 2004-2008;
- UNIDO–UNEP Program on Resource Efficiency and Cleaner Production;
- UNEO-UNIDO: Technology Transfer: Biomass based power generation;
- Sustainable Product Innovation (SPIN);
- Waste Agricultural Biomass for Energy;
- UNIDO: Green industry for low carbon growth;
- GEF-UNIDO-MIME: Industrial Energy Efficiency-Cambodia (IEEC).

Project implementation arrangements and implementation modalities, institutions involved, major changes to project implementation

The GEF-UNIDO project is closely coordinate with other climate change related ongoing as well as planned relevant initiatives to ensure maximum synergies and overall impact of related technical assistance to Cambodia. The GEF-UNIDO project is closely collaborated with the Climate Change Department (CCD) of Ministry of Environment (MOE), Energy Efficiency Office, Ministry of Industry, Mines and Energy (MIME) and NCPO-C. GEF-UNIDO project is also provided technical assistance to prospective sub-borrowers and participating banks for development and techno-economic due diligence of projects.

Project is synergized with Cambodian Climate Changed Alliance (CCCA) a multi-donor initiative (funded by SIDA, DANIDA, EC and UNDP) to address Climate Change and Disaster Risks reduction in Cambodia. On the one hand, it aims at creating conditions in the form of capacity development and institutional strengthening to preparing for and mitigate climate change risks, and on the other hand, to directly help vulnerable communities by enhancing their resilience to climate change and other natural hazards. The overall objective of the CCCA is that *Climate Change activities in Cambodia are nationally owned, led and aligned with Cambodia's development priorities, and are effectively coordinated and implemented.* CCCA has 3 results as the following (1) NCCC capacity to coordinate national policy making, capacity development, and outreach/advocacy efforts, and to monitor the implementation of national climate change strategy is strengthened; (2) A platform is established and in operation providing Cambodia with update knowledge and learning opportunities on climate change; and (3) Key ministries, agencies and civil society organizations have access to financial and technical resources to design, implement and monitor climate change adaptation interventions.



GEF-UNIDO Project implementation structure

The GEF-UNIDO project is also seeking collaboration and discussing possible co-financing agreement with the local financial institutions/Banks. The availability of increased financing for IEE through the Rural Development Bank (RDB) for agro sector, commercial banks and the creation of Energy Service Companies (ESCOs) inherent in the forthcoming Law on Energy Efficiency will provide market conditions conducive for progressive and sustained scaling-up of industrial energy efficiency projects and performance improvements, and consequent global environmental benefits. In addition, UNIDO and its Cambodian counterparts (Ministry of Industry Mines and Energy) will continue to discuss with other donor/financing agency like NEDO, JICA Japan, IFC Cambodia, SECO (Green Credit Line) on the possibility of cash co-financing contribution to the GEF UNIDO project.

Major changes to project implementation

During the project implementation, the activities did not change much from the original proposal, except, they added the in-company training program, which is find obtained from the other sources. During the implementation, the project team works closely or well cooperated with the other projects such as renewable energy project. The provincial training program, the project team is collaborating with the provincial department of the Industry, Mines and Energy.

Positioning of the UNIDO project (other initiatives of government, other donors, private sector, etc.)

As for the project implementation arrangement, UNIDO holds the ultimate responsibility for the implementation of the project, the delivery of the planned outputs and the achievement of the expected outcomes. The project is directly executed by UNIDO in collaboration with Climate Change Department (CCD) Ministry of Environment (MOE), National Cleaner Production Office- Cambodia (NCPO-C) and close co-operation with the Ministry of Industry, Mines and Energy (MIME). As agreed with the Government of Cambodia MIME has overall coordination responsibility while the NCPO-C hosted by MIME is responsible for most of the substantive work to be performed during the Project execution.

UNIDO is responsible for the general management and monitoring of the project, and reporting on the project performance to the GEF. UNIDO is in charge of procuring the international expertise needed to deliver the outputs planned under the three project components. It will manage, supervise and monitor the work of the international teams and ensure that deliverables are technically sound and consistent with the requirements of the project.

A Project Management Unit (PMU) is established within the NCPO-C. The PMU consists of the National Project Manager (NPM), Project Coordinator, National climate change expert, National GHG mitigation expert, Translator, and Project Administrative Assistant (PAA). The PMU is responsible for the day-to-day management, monitoring and evaluation of project activities as per agreed project work plan in close collaboration with part time Chief Technical Advisor (CTA) UNIDO, the Ministry of Industry, Mines and Energy (Energy Efficiency Office) and Climate Change department (CCD) of Ministry of environment. The PMU coordinates all project activities being carried out by project national experts and partners. It is also be in charge of the organization of the various seminars and training to be carried out under Project Components 2-5. The PMU is partly funded by the GEF budget and partly co-financed by NCPO-C. During the whole implementation period of the project UNIDO and NCPO-C provide the PMU with the necessary management and monitoring support.

A Project Advisory Committee (PAC) is established for periodically reviewing project implementation progress, facilitate co-ordination between project partners, provide transparency and guidance, and ensuring ownership, support and sustainability of the project results, The PAC has a balanced representation from key ministries, public institutions, private sector, NGOs, UNIDO and other international organizations partnering in the project or having relevant ongoing programs and it will be chaired by Secretary of States of MIME co-chaired by GEF Political Focal Point of Cambodia. The final composition of the PAC defined during the project implementation start-up phase. The PAC is envisaged to meet twice a year.

At the beginning of project implementation a detailed working plan for the entire duration of the project has been developed by UNIDO in collaboration with the PMU, MIME, MOE and the international teams of experts. The working plan is clearly define roles and responsibilities for the execution of project activities, including monitoring and evaluation; it sets milestones for deliverables and outputs. The working plan is used as management and monitoring tool by PMU and UNIDO and reviewed and updated as appropriate on a biannual basis.

Counterpart organization(s)

Government:	Ministry of Environment (MOE)
Coordinating Agencies:	Ministry of Industry, Mines and Energy (MIME)
Host country counterpart:	Ministry of Industry, Mines and Energy (MIME) National Cleaner Production Office – Cambodia (NCPO-C) Private sector enterprises
Executing Agency:	United National Industrial Development Organization (UNIDO)
Cooperating Agency:	Ministry of Environment (MOE) Ministry of Industry, Mines and Energy (MIME)

III. Project assessment

A. Design

- The project is established according to the design that has been agreed upon with UNIDO and GEF. Minor changes are described in chapter II, but the rather enlarged the project than cut it down. The design aims at the reduction of GHG through energy efficiency and the increased utilization of renewable energy. It does not include the consideration of environmental parameters (e.g. water and air emissions).
- The design of the project is suited to achieve the project goals. It has been developed in coordination with the relevant ministries and branch organizations. The companies selected as partner come from the relevant industrial sectors in Cambodia (Food, bricks, garment, rubber).
- The project goals (more energy efficiency and more renewable energy) meet the national requirements (less dependency on energy imports), the company requirements (lower energy costs) and the global interests (fewer GHG-emissions).

B. Relevance

- *Relevance to national development and environmental agendas*: Cambodia has several documents on the national policy on energy and environment as well as on economic growth (see chapt. II). The project is relevant to many of these documents. This could be proven by meeting several representatives of the relevant ministries.
- *Relevance to target groups*: The relevance of the project's objectives, outcomes and outputs to the different target groups of the interventions has been determined through meetings with representatives from branch organisations and through the visit of selected companies. Energy issues as part of productivity in general are relevant to all companies met or analysed through the reports. Energy in Cambodia is more expensive than in the neighboring countries and plays an important role in the competitiveness of the country on the world market.

C. Effectiveness

- The project has achieved a number of outputs so far. The number of trainings and case studies performed let the evaluator expect that the results planned will be reached during the project. The project generated results that could lead to changes in the behaviour of permitting experts and branch representatives.
- The actual project outcomes commensurate with the original or modified project objectives. There are real outcomes of the project and they are commensurate with realistic expectations from such projects.
- The stakeholders perceive the quality of the proposed measures and in general are interested to continue the cooperation with the NCPO. There is even a "Readiness to Pay" for results like these, but not for studies.
- A potential longer-term impact is given, as soon as the participating companies and/or their branch organisations use the material elaborated. It can also be expected that the training of people from the government department will shop long-term impacts.
- Since the case studies have performed in companies that exist frequently (rise, food, bricks, garment, rubber), catalytic or replication effects can be expected. Of course, it has to be taken into account that companies in the same sector might be in competition on the market and the information flow is limited therefore.

D. Efficiency

- The cost benefit for the companies in the project was high. Most investments paid back in lest than 2 years.

- Regarding the costs of the project, the evaluator got the impression that the money supplied is used effectively and efficient.

E. Sustainability

- Financial risks. Cambodia has a fast growing economy, especially in the sectors envisioned in this project. Companies as well as branch organizations and administration should be interested in a continuation. The interviews with all partners showed that there is a certain readiness to pay for results, but not for studies. At looks, as if the NCPO could generate income for the continuation of the project, but public support from national and international bodies will be necessary, as far as this can be seen now.
- Sociopolitical risks. At the moment it looks as if there is sufficient stakeholder awareness in support of the project's long-term objectives. The various key stakeholders see that it is in their interest that project benefits continue to flow; but of course changes in the political landscape could change the situation. A continued support through UNIDO and its NPC-office in Phnom Penh is important therefore.
- Some companies decided to buy cheap equipment for the technological options developed by the NCPO. Breakdown of some machinery resulted from this, and there is a certain risk, that this failure could be accounted to the project. NCPO does not take part in the decision finding about the equipment purchased, but wrong decisions about chosen equipment might jeopardize success.
- Institutional framework and governance risks. The legal frameworks, policies, and governance structures and processes within which the project operates as they were found during the visit don't pose risks that may jeopardize sustainability of project benefits. Companies in Cambodia are working to increase their export rate and have to fulfill requirements of American, European and Japanese customers. Those interests go hand in hand with the ambitions of the project.
- Environmental risks. The project concentrates on the reduction of the emissions of greenhouse gases in the production sector. So far, mainly CO2-emissions from energy installations (generation of heat and electricity) have been investigated. There are also other Greenhouse Gases in the production sector. More than this, some of the new technologies applied (e.g. wood gasifiers) have the potential to emit gases that cause environmental harm (CO, NOx, …) or cause waste water. So far, no problems with these emissions have been reported, but there might be a certain environmental risk left.

F. Project coordination and management

- The project is run at the NCPO under the experienced management of Dr. P.K. Gupta. The management can be accounted as an excellent one and the monitoring of the project results and outcome is well documented. The results of the case studies are well documented in English and Khmer (under printing) language. All reports and activities are documented on the Website of the office (www.cambodian-cpc.org). The project is embedded into a number of other projects and the team shows sufficient expertise to carry out the necessary trainings and analyses.

Criterion	EVALUATOR'S SUMMARY COMMENTS	EVALUATOR'S RATING
Attainment of project objectives and results (overall rating) **Sub criteria (below)**		
Effectiveness	All outputs planned for this project can be reached within timeframe	**HS**
Relevance	Relevant industrial sectors addressed, important issue (energy)	**HS**
Efficiency	Results have been achieved within the planned budget	**HS**
Sustainability of Project outcomes (overall rating) **Sub criteria (below)**		
Financial	Structure of financial contributions of companies for future cooperation has to be designed.	**ML**
Socio Political	Education aspects included	**L**
Institutional framework and governance	Very good designed	**L**
Ecological	Project was principally aimed at GHG reduction therefore focused on FHG. Environmental concerns need to be addressed in more detail (emission of CO, SS, NOx,…)	**MS**
Monitoring and Evaluation (overall rating) **Sub criteria (below)**		
M&E Design	Excellent documentation	**HS**
M&E Plan Implementation (use for adaptive management)	No serious time delays	**HS**
Budgeting and Funding for M&E activities	Kept within the budget lines	**HS**
UNIDO specific ratings		
Quality at entry		
implementation approach		
UNIDO Supervision and backstopping		
Overall Rating		HS

IV. Conclusions, Recommendations and Lessons Learnt

This chapter can be divided into three sections:

A. Conclusions

From the evaluation it can be expected that the project will reach its goals and will deliver the outputs and outcomes as defined in the plan.
The team is very engaged and under a good and strict management.
The companies visited appreciate the work done and have put into realization a number of options. Reductions in Greenhouse Gas Emissions were obtained and are well documented.
The project is well known at the relevant ministries and branch organizations.

B. Recommendations

In order to enable a financial sustainability, a scheme should be worked out, how successful projects can contribute to a continuation. As companies will not pay to a UNIDO-office or a governmental institution, something like a revolving fund for projects could be discussed. Companies should pay a small percentage of their profit, achieved through the consultation, to the fund in order to finance further project work. (Recommendation to NCPO, UNIDO, GEF and government)

In some cases it seemed that companies bought equipment of minor quality that could not fulfill the expectations over a relevant time period. The Cambodian NCPO cannot recommend specific manufacturers, but badly working technologies can jeopardize the dissemination success. A quality control in that respect – e.g. criteria for equipemt to be purchased – should be discussed.

C. Lessons Learnt

Electricity supply outside the capital is unsecure in Cambodia, as in many other developing countries. In general diesel engines generate locally electricity at low efficiencies and high costs. They also generate remarkable GHG-emissions and possibly other toxic gases (NOx, CO, particulates, …). Consequently the projects aimed at a substitution of such devices through systems based on biomass, like wood gasifiers with diesel engines. These installations generate gas emissions as well and also solid waste (ashes, slag, …) that could be harmful to the employees and the environment. There is a need for an established technology to convert biomass (dry, woody, as well as wet) into electricity. These technologies should be simple (no well trained and skilled personnel available), reliable (rum with little maintenance on different biomass fuels) and cheap. If possible, they should be produced or at least assembled locally. Sharing international experience through non-profit organizations like UNIDO could help to overcome this problem.

Most case studies visited in this evaluation but also in other countries concentrate on thermal energy (supply and utilization of heat). In general there is little work done regarding the efficient use of electricity, although it is expensive. Improving the electricity utilization in general is more difficult than energy saving in the heat sector.

Some companies would like to use the achievements of the project and the fact that they cooperated with UNIDO in their marketing strategy. In order to support this, it could be helpful to give them a certificate or label for the participation and the reductions achieved. Mainly companies working for the export market could improve their international competitiveness by showing climate related activities. More than this, a better visibility of the project and its results could help to spread the concept within Cambodia (and similarly in other countries).

Annexes

ANNEX A: PROJECT RESULTS LOGICAL FRAMEWORK

Project Strategy		Objectively verifiable indicators				
		Indicator (quantified and time-bound)	**Baseline**	**Target**	**Source of verification**	**Risks and Assumptions**
Goal	To reduce specific energy intensity and related emissions of greenhouse gases generated by Cambodian manufacturing sector	1. Incremental CO2eq emission reduction (tons of CO2eq) 2. Specific energy consumption (energy use per ton/unit of output) for selected manufacturing sectors	1 Specific energy consumption (SEC) for 5 manufacturing sub-sectors in the focus of the GEF-UNIDO project 2. SEC referred to output quantities currently not available for many sub-sector. 3. To be defined in Year 1 of project implementation under PC-1	Cumulative reduction of SEC by more than 20% over the period 2012-2023 Cumulative reduction of GHG from pilot projects more than 50% over the project period	1. Annual reports of NCPO-C and EEO 2. End of project Survey/evaluation report 3. Final project evaluation report	1. Cambodian Governments remain committed in the medium and long-term to improve national energy security and effectively enforce the environmental laws. 2. Energy costs reduction becomes a first priority for industry.
Objective of the project	To Improve Energy Efficiency of Cambodian Industrial Sector leading to reduced global environmental impact from GHG missions and enhanced competitiveness for the industrial sector in a country with an energy deficit.	1. Incremental direct CO2eq emission reductions (tons of CO2eq) 2. Incremental indirect CO2eq emission reductions (tons of CO2eq) 3. Specific energy consumption/energy intensity of selected sectors.	1. No direct CO2eq emission reductions in selected sectors 2. No indirect CO2eq emission reductions in selected sectors 3. No SEC and related GHG generation for selected sector exists.	1. Direct emission reductions: 260,000 tons CO2eq over period 2012-2023 2. Indirect emission reductions: 250,000 tons CO2eq over period 2012-2023 3. SEC average annual reduction of 2-3% (aggregate average)over period 2012-2023	1. Monitoring, tracking and benchmarking program established by the project with MIME and NCPO-C 2. End of project Survey 3. Final evaluation	1. Sustained and solid Government support to the project. 2. Industry drive for energy costs reduction and enhanced energy efficiency grows progressively stronger and widens. 3. Various international IEE technical cooperation programs achieve good synergy and leverage of respective complementarities
Outcome 1	Demonstrable energy savings in participating companies through IEE pilot projects	1. Number of IEE pilot and quick scan projects are selected with co-financing commitments 2. Anticipated savings in SEC and GHG emissions are estimated	1. No/ very few investment related IEE projects are in place (TA related projects are not considered) 2. No information on	1. To develop and standardise energy audit reporting format, worksheets and tools to be used by IEE projects 2. Energy performance	1. Energy Efficiency office and NCPO-C Annual Report 2. End of project Survey	1. Sustained Government support to agreed project activities. A2. Participating companies can arrange to get requisite finance for IEE implementation.

		3. Case study compiled document is published	SEC , energy benchmarking and energy saving potential is available.	benchmark and saving potential of SEC and GHG emissions reduction. 3.compendium of case studies from Pilot projects	3. Final evaluation 4. Annual reports of participating companies.	
Project Component 1: Implementation of Industrial energy efficiency Pilot project						
Output 1.1	.Energy efficiency projects for cumulative 45,000 TOEs** and related potential economic savings are identified by 40 enterprises participating in the Quick Scan process and appraised by project experts.	1. Number of quick scan IEE projects are implemented with direct support from the GEF project 2. Energy savings (TOEs) achieved annually as well as over the project lifetime	Most companies, particularly in selected sectors, have major potential for techno-economical EE improvements but not the resources (human and/or financial) to develop and implement such projects.	1. 40 IEE projects quick scan implemented with direct support from the GEF project 2. Cumulative 45,000 TOEs of energy savings over the EE investments lifetime	1. Environmental, financial and/or sustainability reports of Companies partnering in the IEE projects. 2. Energy Efficiency office (MIME) & NCPO-C annual report 3. Project report 4.IndependentFinal evaluation of project	1. Companies partnering with the GEF - UNIDO project improve their economic and environmental performance. 2. Companies partnering with the GEF UNIDO project fulfill their co-financing commitments (verbal in case of quick scan)
Output 1.2	13 pilot IEE projects for cumulative 15,000 TOEs** of energy savings over the investments duration are implemented by enterprises, from selected 5 industrial sectors, partnering in the project.	1. Number of pilot projects are implemented with direct support from the GEF-UNIDO project 2. Energy savings (TOEs) achieved annually as well as over the project lifetime	Most companies, particularly in selected sectors, have major potential for techno-economical EE improvements but not the resources (human and/or financial) to develop and implement such projects.	1.13 IEE pilot projects implemented with direct support (technical and part financial) from the GEF-UNIDO project 2. Cumulative15,000 TOEs of energy savings over the EE investments lifetime	1. Environmental, financial reports of Companies partnering in the IEE projects. . 2. Energy Efficiency office (MIME) & NCPO-C 3. Project progress report 4. Final project evaluation report	1. Companies partnering with the GEF - UNIDO project improve their economic and environmental performance. 2. Companies partnering with the GEF - UNIDO project fulfill their co-financing commitments
Output 1.3	Results of the pilot projects both in economic and	compendium of case studies/success stories is published in English	No such information/ document is available in Cambodia on IEE	Compendium is printed by end of 3rd year when most of IEE projects are	1. Energy Efficiency office (MIME) & NCPO-C	1. Participating Industries particularly quick scan participating unit are ready to publish and share the results with

	environment context are compiled in a compendium for effective dissemination	and local language	for manufacturing sector	implemented.	2. Project progress report 3. Final project evaluation report	others.
Outcome 2	Supply of National service providers in IEE are available (to match demand in component-4)	1. Number of IEE and energy management (EM) experts in the country. 2. Formal set up of IEE expert network in the country 3.Increased availability of hardware/technology and after sale services in the country 4. Web page on the project populated with relevant information and manual is in place.	1. No IEE /EM specific national experts in place and most of projects are implemented with assistance of foreign experts 2. Limited or no IEE service is provided by equipment/technology suppliers. 3. No ICT based tool is available on IEE?EM in the country	1. 40 National Energy efficiency experts capable o delivering quality services are available 2. National IEE network is established. 3.Local supplier of technology are capable to providing IEE services to their clients as well as after sale service.	1. Annual reports of NCPO-C and EEO 2. End of project Survey 2. Final evaluation	1. Sustained Government support to agreed project activities. 2. Energy efficiency consultants, industrial equipment supplier and vendors, and other relevant entities recognize the economic potential of the IEE market in Cambodia
Project Component 2: Capacity building and development of tools for implementing industrial Energy efficiency						
Output 2.1	A cadre of at least 40 national experts from relevant support institutions (NCPO-C), academic institutions, industry associations, Ministry of Industry, Mines and Energy) consulting Cos. and independent engineers, are equipped, though classroom and on the job training (in the Quick Scans	1. Number of energy management system experts in the Cambodian market 2. . Number of energy efficiency experts in the Cambodian market 3. Number of energy system/equipment optimization experts in the Cambodia market 4. Number of IEE seminars and trainings delivered	1. No/rare energy management system experts in the Cambodian market 2. No industrial Energy efficiency system optimization experts in the Cambodian market only few engineering companies provide partial services 3. IEE seminars and trainings bound to be delivered by international experts	1. 40 Industrial EE/ energy management system experts trained 2. 20-25 seminars and trainings for enterprises managers and engineers delivered by EM and IEE national experts trained by the GEF project	1. Project progress report 2. End of project Survey 3. Final evaluation	1. Sustained Government support to agreed project activities for the National Energy Efficiency Agency 2. Industry drive for energy costs reduction is and will remain strong 3. Energy efficiency consultants, industrial equipment supplier and vendors, and other relevant entities recognize the economic potential of the IEE market in Cambodia

	and pilots) with the technical capacity and tools required to develop and implement energy efficiency measures in industry. .					
Output 2.2	IEE trained professionals are registered and empanelled as resource person in a network of service providers (RECP) aimed to assist companies in implementing industrial energy efficiency	Network facility with specific area of specialization of experts is available Network is meeting regularly to exchange/share IEE developments/concerns.	No such network in Cambodia exists and client has no access to IEE experts	A registry of IEE experts is available with EEO and NCPO-C. A formal network of IEE experts is in place	1. IEE program website 2. Project report 3. Final evaluation	1. Energy efficiency experts recognize the business potential of the IEE in Cambodia and also in neighboring countries
Output 2.3	Local suppliers of relevant technologies (kilns, boilers, etc.) are also trained in IEE. Potential local suppliers are supported, to ensure more cost- effective technology and more reliable after-sales service.	1. Number of local suppliers trained for providing IEE services 2. Number of suppliers assisted in collaboration /agents of foreign technology suppliers. 3. Number of private firms providing energy management system	Few equipment supplier/technology providers are equipped to provide IEE /EM services in Cambodia No enterprise has expertise and facilities of after sale service in Cambodia.	1. At least 10 equipment and technology suppliers in Cambodia are trained in IEE tools and techniques. 2. Technical tie-up/sole selling agent of Energy efficient equipments from neighboring countries. 3. 10 companies implement at least 10 energy management or IEE project each year	1. Project progress report 2. Annual reports of Companies participating in the project 3.Number of IEE technical tie-ups in the country 4. Total investment done during project period.	1. Vendors/suppliers partnering in the expert capacity building program with the GEF project improve their business performance and adequate finance for implementation of IEE project is available.
Output 2.4	Web based guidance tool/manual on IEE developed.	Dedicated web page for IEE is in place and populated for training material, information and links with relevant web sites.	No such ICT based instrument exists on IEE in Cambodia. Information on IEE experts/technology suppliers do not	GEF –IEE project web site with relevant information is continuously updated. EM/IEE manual relevant	Number of hits on the website and links to other websites. Khmer and English version IEE	No specific assumption and risk for this output.

				to Cambodian industries is available	manual	
Outcome-3	Stronger institutional framework in place to ensure long-term support for energy reduction efforts in enterprises	1. List of institutional participants trained to promote industrial energy efficiency 2. No. of experts trained in preparation of bankable IEE proposals 3. No of financial institutions participated in financial engg. raining 4. Guide for the Implementation of IEE & Energy Management in compliance ISO 50001 international standards is developed..	1. No institutional framework exist to promote IEE at implementation level. 2. Access to finance is problem due to lack of knowledge in preparing bankable proposals 3. Financial institutions evaluates the project on conventional basis rather than incl. all factor incl environment, safety and liability in mind. 4 No IEE Guidance manual exists	1. At least 200 participants from Govt. and regulatory agencies are trained in IEE. 2. 100 personnel from Industry are trained in financial engineering (bankable proposals) 3. Guideline on IEE/EM/operation and maintenance of Boiler is available 4. At-least 20 companies get access to finance through GEF project.	1. Project progress report 2. Annual reports of project implementing partners 3.Number of IEE projects selected for financing 4. Total investment done during project period	1. Sustained Government support to agreed project 2. Industry drive for energy costs reduction is and will remain strong 3. Energy efficiency promoters, financial institutions recognize the need and economic & Environmental saving potential of the IEE market in Cambodia
Project Component 3: Strengthening of institutional framework for industrial Energy efficiency						
Output 3.1	Capacity building of relevant Govt. departments to promote industrial energy efficiency	1. Number of training programme conducted on IEE 2. No. of Govt. staff trained in IEE /EM implementation support.	No such organized capacity building programme exists in Cambodia. Few seminars on Rural electrification, renewable energy are conducted by foreign experts	1. 12 Intensive Capacity building programme is conducted during project period. 2. 200 participants trained to promote industrial energy efficiency	1. Project progress report 2. Annual reports of project implementing partners 3. Final evaluation	1. Government interest & support to build capacity for IEE promotion 2. Policy level intervention in IEE is done by RGOC 3. Energy efficiency promoters recognize the need benefits of IEE in Cambodia
Output 3.2	Companies are trained in preparation of bankable IEE project proposals	1.Number of training programme conducted on IEE financial engineering 2. No. of experts trained in preparation of bankable IEE proposals	No facility on financial engineering and technology assessment exist in Cambodia	1.2 training programme conducted in year-1 and 1 each in subsequent years. 2. At least 100 personnel from Cambodian manufacturing industries are trained in preparing bankable proposal. 3. 30 proposal for IEE financing are prepared and considered for financing	1. Annual reports of project implementing partners 2. End of project report 3. Final project evaluation	1. Industry drive for energy costs reduction is and will remain strong 3. Energy efficiency promoters, financial institutions recognize the need and benefits of the IEE market in Cambodia

Output 3.3	Capacity building of financial institutions to assess investment proposals in IEE	1.Number of training programme conducted for FII's in Cambodia 2. No. of experts trained in comprehensive technology evaluation to facilitate financing.	No organized training on total costing including environmental and social liability in technology assessment for FII's exist in Cambodia	1.4 training programme conducted during project period 2. At least 60 personnel from FII's are trained in assessing IEE project for financing 3. 50 proposal for IEE financing are received and considered for financing	1. Annual reports of project implementing partners 2. End of project report 3. Final project evaluation 4. Annual reports of participating FII's	1. FII's recognize IEE as an business opportunity for their lending operations. 2. Industry drive for energy costs reduction is and will remain strong 3. RGOC support industrial development bank/FII's through dedicated fund allocation for IEE.
Output 3.4	Practical Guide for the Implementation of Energy Management in Industry in compliance ISO 50001 international standards is developed..	Tools available for supporting energy efficiency in industry	No tools are and will be most likely available during and immediately after the GEF project implementation period	1. An Energy Management System Implementation Guide in compliance with EN 16001/ ISO 50001 standards is produced in English and Khmer language	1. IEE Best Practices dissemination program website 2. Project report 3. Final evaluation	A1. Sustained Government support to agreed project activities for the National Energy Efficiency office MIME
Outcome-4	Stronger institutional framework in place to ensure long-term support for energy reduction efforts in enterprises	1. Number of Awareness programs conducted on IEE benefits 2. Number of energy efficiency projects implemented annually 3. Number of EN16001 or ISO 50001 certified companies 4. Number of IEE service contracts stipulated by Energy Management and Energy efficiency experts and technology suppliers trained by the GEF project	1. Not available. Numbers to be estimated during 1stYear of project impl. through Survey results and further data collection 2. So far no EN16001 or ISO 50001 certified companies 3. In past most IEE related projects are developed and implemented using foreign experts 4. Technology suppliers are not competent to provide IEE services to their clients	1. 100% increase of annual number of implemented projects between 2010 and 2023 2. 24 awareness prog. Covering 5 selected sectors are conducted during project period. 3. At least fifteen companies get certified to EN16001 or ISO 50001 by 2015 4. More than 500 IEE services contracts stipulated by national experts/suppliers/vendors trained by the GEF project with Cambodian enterprises between 2013 - 2023	1. Energy Efficiency office EEO and NCPO-C Annual Report 2. Industry associations annual reports 3. End of project Survey 4. Cambodian standard authority or certification bodies	A1. Energy prices remain high in the medium and long-term A2. Industry drive for energy costs reduction and enhanced energy efficiency grows progressively stronger A3. In the medium EN 16001 and ISO 50001 certification becomes tool and/or requirement for export oriented enterprises and for market access
Project Component 4: Up-scaling of Industrial Energy efficiency In Cambodia						
Output 4.1	The results of the pilot projects and	1. Number of energy management system	1. No energy management system	1. 20 energy management system	1. Project progress report	A1. Sustained Government support to agreed project activities for the National

	Quick Scans are widely disseminated. At least 40IEE projects for cumulative 45,000 TOEs of energy savings are developed and implemented by industrial enterprises as result of their participation in the capacity building program and results achieved by participating pilot units of the project.	experts in the Cambodian market 2. Number of energy efficiency experts in the Cambodia market 3. Number of IEE seminars and trainings delivered	experts in the Cambodia market 2. No industrial steam system optimization experts in the Cambodia market but few engineering companies provide partial services 3. IEE seminars and trainings bound to be delivered by international experts	experts trained 2. 20 steam systems optimization experts trained 3. 20-25 seminars and trainings for enterprises managers and engineers delivered by EM and SSO national experts trained by the GEF project	2. End of project Survey 3. Final evaluation	Energy Efficiency Agency A2. Industry drive for energy costs reduction is and will remain strong A3. Energy efficiency consultants, industrial equipment supplier and vendors, and other relevant entities recognize the economic potential of the IEE market in Cambodia
Output 4.2	Industry decision-makers understand their potential for energy efficiency gains and undertake energy efficiency activities.	1. Number of CEOs/owner attended IEE clinics. 2. Number of companies participating in the project seminars 3. Number of companies personnel participating in the project trainings	1. No marketing tool for IEE like IEE clinic exist so far. Few trainings on EE/Boiler safety for manufacturing and commercial enterprises are planned for 2010 by National Cleaner production office Cambodia.	1. 500 CEOs attend the 24 CP Clinics organized sector-wise/thematic 2. 400 companies participating in the project seminars and workshops 3. 200 enterprises staff attend project energy management and IEE training seminars/workshops	1. Project progress report and NCPO-C annual report. 2. List of participants in IEE Clinics, training and seminars 3. Final evaluation report	1. Sustained Government support to agreed project activities for the National Energy Efficiency Agency 2. Costs reduction remains a first priority for companies' top management.
Output 4.3	Other stakeholders including technology / equipment suppliers will understand their role to promote industrial energy efficiency	1. Number of technology & equipment suppliers participating in the project seminars/training 2. Number of contracts received by suppliers through GEF projects	No training/capacity building done for of technology & equipment suppliers on IEE Hardly suppliers get contract for EM/IEE in Cambodia	1. 50 suppliers/vendors participating in the project seminars and workshops 2. 20 contract related to IEE implementation is bagged by supplier trained by project.	1. Project progress report and NCPO - C annual report. 2. Balance sheet/annual report of suppliers. 2. End of project report 3. Final project evaluation	A1. Sustained Government support to agreed project activities for the National Energy Efficiency Agency A2. Costs reduction remains a first priority for companies' top management.
Outcome-5	Establishment of policy, legal and regulatory	1.Number of IEE policy, EM programs developed and put in	1. No IEE/EM specific policy program is in place	1.At least 3 national IEE policy programs operate and develop smoothly:	1. Policy/ Government Act/decree on IEE.	A1. Sustained Government support to agreed project activities.

	frameworks that sustainably promote and support industrial energy efficiency	operation 2. Adoption of regulatory measures to support IEE implementation and market transformation	2. No specific regulation to support IEE /EM is in place	2. IEE Monitoring, Tracking and Benchmarking (MTB) Program; IEE Best Practice Dissemination Program; 3. National Energy Auditor Accreditation Certification Program operational	2. Boiler Safety act & Operation & Maintenance guideline 3.NEAA Course developed and certifying agency in place	
Project Component 5: Formulation and implementation of policies, regulations and programmes to promote and support sustainable industrial energy efficiency.						
Output 5.1	Mechanisms for mainstreaming IEE concepts and policy instruments have been created at suitable administrative levels in relevant RGOC policies and regulations	1.Increased role for IEE in, energy, industry and environmental policies at national levels 2.IEE opportunities are recognised and utilised for achieving UNFCCC commitments.	1. No policy exist to promote and encourage implementation of IEE by Cambodian manufacturing sector 2. Role IEE in climate change mitigation from Cambodian industry is not well recognized	1. Policy document on Industrial energy efficiency is prepared for RGOC action. 2. Tools and instruments to calculate GHG reduction from IEE projects are in place	1.Annual report of NCPO-C, EEO 2.Independent final project evaluation 3.Publication of relevant policies, strategies and guidelines by RGOC	Uptake of IEE by enterprises and other organisations is constrained by lack of government incentive
Output 5.2	Procedures for tracking and benchmarking energy consumption in industry are developed and established	1. Increased role for IEE in other energy related policies of RGOC. 2.Structures, tools and methodologies to monitor, tracking and benchmarking energy consumption and efficiency in industry	So far IEE has no significant role in Energy Policy in Cambodia. No structures, tools and methodologies are in place	1. Reporting structure is put in place 2. Reporting templates are developed and used 3. Website is created 4. Benchmarking methodology is developed and tested	1. Energy Efficiency office, MIME and NCPO-C Annual Report 2. Internet/Web 3. Project reports 4. Final evaluation	A1. Sustained Government support to agreed project activities.
Output 5.3	National Energy Auditor Accreditation (NEAA) programme is established	National accreditation body in place. List of professional certification programs accredited by national relevant body	No national Industrial Energy Manager Certification Program is in place and will be in place in the near future	1. National NEAA program is developed and offered to IEE/EM experts.	1. National accreditation institution 2. Continual education/ professional certifying institutions	1. Energy Efficiency will mainstreamed in law and Energy audit will be made mandatory. 2. In the medium and long term industry's demand for qualified IEE experts and their services increases

ANNEX B. VISIT AND INTERVIEW PROGAM

Agenda for Evaluation from 07th-15th August 2013

Time	Meeting with	Institution	Address	Status
06 August 2013: Pick up Dr. Hans SCHNITZER from airport at 19:25pmvia TG584 to Imperial Garden				
Date: 07 August 2013				
09:00	Pick up Dr. Hans SCHNITZER from Imperial Garden Hotel to training room			
10:00 – 11:00	Dr. PK Gupta, Chief Technical Advisor	NCPO-C	#45, PreahNorodom Blvd	**Took place**
11:00-12:00	Working with national expert			
Lunch				
Afternoon	MrPov Norm, Director	Norm Srim Rice Mill	Road #2, PrekThloeng Village, PrekKompes Commune, KandalSteungDistric, Kandal Province, Cambodia. Tel: (855)12 76 54 47	**Took place**
Date: 08August 2013				
9:00-10:00	H.E Dr. Sat Samy, Secretary of State	Ministry of Industry, Mines and Energy	Tel :012 299 399	**Took place on August 14**
10: 15-11:00	Mr. By Pitou, Director of Department of Industrial Techniques	Department of Industrial Techniques	#45, PreahNorodom Blvd Tel: 012 478 998	**Took place**
11:30-12:00	CheaElyan, Deputy Director of Department	Royal University of Phnom Penh	Tel: 017485675	**Took place**
14:30-16:00	LengSengHuotFaFa Group Co., Ltd		# 1252, PloveLum, PhumChamroeunPhal, SangkatBoeungTumpun, Khan Mean Chey, Phnom Penh, Cambodia**.** Tel :	**Took place**
Date: 09 August 2013				
9:00-10:00	H.E Lonh Heal, Technical Director General and GEF Focal Point in Cambodia and Mr. Long Rithirak, Deputy General Director	Ministry of Environment	No 48, Sihanouk Blvd., Phnom Penh. Tel: 012 927 001	**Took place**

10:30-11:00	Mr. HengHeang, Chairman	Phnom Penh Small and Medium Industry Association (PSMIA)	Tel: 012 647 888	**Took place**
14:00-14:30	Mr. Ly TekHeng, Operation Manager	Garment Manufacturing Association of Cambodia (GMAC)	No. 175 Jawahar Nehru Blvd (Street 215) Phnom Penh, Kingdom of Cambodia Tel: 012 889 110	**Took place**
15:00-16:30	Koe Mom, Director	LYLY Food Industry Company	# 168A, 555 Signboard St, SangkatToekThlar, Khan RusseyKeo,Phnom Penh, Cambodia. Tel: 097 689 9999	**Took place**
Date: 14th August 2013				
Morning	Mr. Jason Huang	Sky High (Cambodia) Co., Ltd	National Road No 4, Prey Pring Village Phnom Penh 12405, Cambodia. MrJason HuangTel: 016 533 168	**Took place**
	POP Ice Company		Along the road 2002, SangkatTekThla, Khan SenSok, Phnom Penh. Tel: 012 75 54 94	**Took place**
Afternoon	Mr. Ly Song Huor	PunleuPreahAtith (Sun rise) Brick Company	Company KohRokar Village, PrekAngchan Commune, MukKampul District, Kandal Province, Cambodia Tel: (855) 16 42 6666	**Took place**
Date: 15TH August 2013				
Morning	Meeting at the NCPO; discussion with the NCPO-team. Working with national evaluation consultant			

ANNEX C: TIMELINE OF THE ACTIVITIES.

Activity	Year 1				Year 2				Year				Year 4			
	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV
Project Component 1- Implementation of Industrial energy efficiency pilot projects.																
Output 1.1: **Energy efficiency projects for cumulative 45,000 TOEs and related potential economic savings are identified by 40 enterprises participating in the Quick Scan process and appraised by project experts**																
1.1.1 Organise launching seminar for GEF IEE project to elaborate Goals objectives and modus operand.																
1.1.2 Finalize identification and selection of IEE quick scan enterprises in collaboration with enterprises and sector specific industrial associations.																
1.1.3 Clearly define GEF project technical assistance support and enterprises contribution																
1.1.4 Support demonstration companies with energy audit, project development and/or implementation of feasible IEE options to 40 identified quick scan company.																
1.1.5 Monitoring and reporting of energy savings (net and specific) and GHG emission reduction																
Output 1.2: **13 pilot IEE projects for cumulative 15,000 TOEs of energy savings over the investments duration are implemented by enterprises, from selected 5 industrial sectors, partnering in the project**																
1.2.1 Finalize identification and selection of IEE pilot to support in collaboration with industry specific associations and enterprises that have signed co-financing commitment letters																
1.2.2 Clearly define GEF project technical assistance & financial support in implementation of investment specific projects and enterprises contribution (in-kind and cash).																
1.2.3 Technical assistance for Energy Audits, EE potential, selection of IEE technologies, project development and/or implementation																
1.2.4 Recording, Monitoring and reporting of energy savings and GHG emission reduction from IEE implementation																

1.2.5 Preparation of detailed EE project report and case studies from results achieved Monitoring and reporting of energy savings (net and specific) and GHG emission reduction																
Output 1.3: **Results of the pilot projects both in economic and environment context are compiled in a compendium for effective dissemination**																
1.3.1 Customise indicator framework for measuring company-level IEE/EM benefits																
1.3.2 Compilation of results achieved in Quick scan and IEE pilot project.																
1.3.3 Produce and disseminate plain language/local language promotion materials (success stories, fact sheets)																
1.3.4 Compendium is populated on web site and hard copies distributed through Industry association.																
Project Component 2- Capacity building and development of tools for implementing industrial energy efficiency																
Output 2.1: **A cadre of 40 national experts from relevant support institutions, consulting Cos. and independent engineers, are equipped, though classroom and on the job training with the technical capacity and tools required to develop and implement energy efficiency measures in industry.**																
2.1.1 Selection of professionals for IEE/EM training willing to work as IEE professionals/experts in the country.																
2.1.2 Assess training and professional development needs Capacity & building in regards to legal, technical, organisational and other aspects of IEE/EM																
2.1.3 Plan and deliver intensive IEE training on prioritised sectors and EMS (12 training modules are envisaged during the project period) applying 6 step approach explained in Project Doc for GEF CEO endorsement.																
2.1.4Involvement of classroom trained professionals in IEE quick scan and Pilot projects for providing on the job training, tools and techniques to carry energy audit, training on usage of field monitoring equipments.																
2.1.5 Support demonstration companies with implementation of techno-economically feasible IEE options																
2.1.6 Develop and implement a quality management system for IEE Experts report																

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Activity	Year 1				Year 2				Year 3				Year 4			
	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV
Output 2.2: **These professionals are registered and empanelled as resource person in a network of service providers (RECP) aimed to assist companies in implementing industrial energy efficiency.**																
2.2.1 Trained professionals after successful implementation of at least 1 IEE project are enrolled in expert roster maintained by NCPO Cambodia.																
2.2.2 Trained National experts establishes a formal network to facilitate continues up-gradation of skills, marketing of their services effectively																
Output 2.3: **Local suppliers of relevant technologies (kilns, boilers, etc.) are trained in IEE. Potential local suppliers are supported, to ensure more cost-effective technology and more reliable after-sales service.**																
2.3.1 promotion the development of local suppliers of technology in IEE applications																
2.3.2 Assist to creates a network of after-sales services, which is critical for the sustainability of Renewable energy generation and energy efficiency																
2.3.3 Encourage local suppliers to manufacture equipment locally or technology tie-ups with regional suppliers to reduce the capital investment.																
2.3.4 Study visits of local vendors to proven and established IEE technology suppliers particularly in neighbouring countries																
Output 2.4: **Web-based guidance tool/manual on IEE developed**																
2.4.1 Dedicated portal for IEE project is managed by NCPO-C																
2.4.2 Establish, Populate, operate and keep up-to-date IEE website																
2.4.3 Upload guidance manual on IEE methodology, and worksheets to assist easy collection and compilation of baseline data.																
Project Component 3: Strengthening of institutional framework for industrial energy efficiency																
Output 3.1**: Capacity building of relevant Govt. departments to promote industrial energy efficiency**																

3.1.1 Selection of professionals from Govt department responsible for policy formulation and enforcement of national Laws and willing to work as IEE promoter/experts in the country.																
3.1.2 Assess training and professional development needs of Govt staff.																
3.1.3 Plan and deliver intensive IEE training on EMS, IEE policies (8 training modules are envisaged during the project period)																
3.1.4 Involvement of Govt staff in IEE quick scan and Pilot projects for providing on the job training to implement IEE policies.																
3.1.5 Assist government trainees with implementation of IEE policies and regulations																
3.1.6 Develop a quality management system for Govt staff.																
Output 3.2: **Companies are trained in preparation of bankable IEE project proposals**																
3.2.1 Review of existing financial instruments/access to finance by Cambodian industries.																
3.2.2 Development if IEE financial training package in 1st year of project.																
3.2.3 Training of professionals from manufacturing units in preparing bankable proposals.																
3.2.4 In-Company training of financial professionals																
Output 3.3 Capacity building of financial institutions to assess investment proposals in IEE																
3.3.1 Selection of relevant financial institutions (public and private) for training																
3.3.2 Development if IEE financial training package suitable for financial experts to enable dynamic decision making tool for lending.																
3.3.3 Training of professionals from financial institutions/private banks in comprehensive evaluation of proposal received for financing and helping their client in preparing bankable proposals.																
Output 3.4**: Practical Guide for the Implementation of Energy Management in Industry in compliance ISO 50001 international standards is developed**																
3.4.1 Define priority areas in need of technical guidelines for IEE/EM complying ISO 5001 standard.																
3.4.2 Recruit international experts and national experts for development of technical guidelines																

3.4.3 Draft technical guidelines and translate into local language																	
3.4.4 Pilot application of technical guidelines in selected IEE Pilot/quick scan companies.																	
3.4.5 Finalise technical guidelines and seek their endorsement by RGOC/MIME																	
Project Component 4 : Up-scaling of IIE in Cambodia																	
Output 4.1: **The results of the pilot projects and Quick Scans are widely disseminated. At least 40 IEE projects (Quick Scan) for cumulative 45,000 TOEs of energy savings are developed and implemented by industrial enterprises as result of their participation in the capacity building program and results achieved by participating pilot units in the GEF-UNIDO project**																	
4.1.1 Organise National level (4) and provincial level (8) seminar/workshop for creating awareness on Objective, need, benefits and approach to implement IEE.																	
4.1.2Technology need (gap analysis) and technology assessment in selected sectors for technical, financial and environmental aspects																	
4.1.3 Preparation of articles for industry and other relevant magazines and /or newsletters.																	
4.1.4 Production of brochures, fliers and newsletter for distribution (enterprises, municipalities, provincial offices of the Chamber of Commerce and industrial associations)																	
4.1.5 Production of press releases about major IEE projects success stories.																	
4.1.6 Production of video/short movie about GEF projects success stories.																	
4.1.7 Support demonstration companies with energy audit, project development and/or implementation of feasible IEE options to 40 identified quick scan company.																	
4.1.8 Draft national IEE/EM action plan including implementation mechanisms																	
Output 4.2 **Industry decision-makers understand their potential for energy efficiency gains and undertake energy efficiency activities**.																	
4.2.1 Organise Industrial Energy efficiency clinics (12 per																	

year) for CEO's or Owner of manufacturing enterprises in Cambodia to explain Objective, need, benefits and approach of IEE as a marketing tool.																
4.2.2 Technology need (gap analysis) and technology assessment in selected sectors for technical, financial and environmental aspects																
4.2.3 Finalize identification and selection of IEE quick scan enterprises in collaboration with enterprises and sector specific industrial associations.																
4.2.4 Support demonstration companies with energy audit, project development and/or implementation of feasible IEE options to 40 identified quick scan company.																
4.2.5 Draft national IEE/EM action plan including implementation mechanisms																
Output 4.3 Other stakeholders including technology/equipment suppliers will understand their role to promote industrial energy efficiency																
4.3.1 Information dissemination workshops 2 each year (1/2 day) on Industrial Energy efficiency for manufacturing enterprises in Cambodia to explain benefits of IEE for their business.																
4.3.2 Technology information and match making with technology suppliers in the region																
4.3.3 Establishment of Energy Service companies (ESCO's) in Cambodia to provide turnkey projects and services.																
Project Component 5: Formulation and implementation of policies, regulations and programmes to promote and support sustainable industrial energy efficiency.																
***Output 5.*1: Mechanisms for mainstreaming IEE concepts and policy instruments have been created at suitable administrative levels in relevant RGOC policies and regulations**																
5.1.1 Review of national commitments and corresponding strategies and action plans under UNFCCC and other relevant MEA's																
5.1.2 Review applicability of Industrial Energy efficiency for achieving key national commitments under MEAs specially under UNFCCC.																
5.1.3 Development of training modules on Energy efficiency and energy management systems related policies and																

translate into local language																
5.1.4 Develop IEE policies for consideration of MIME responsible for energy security in the country.																
5.1.5 Deliver training to groups of selected government officials in regards to legal, technical, organisational and other aspects of IEE policies.																
5.1.6 Adaptation and translation technical guide in Khmer on how to establish/set an energy management system in compliance with ISO 50001/EN16001																
***Output 5.2*: Procedures for tracking and benchmarking energy consumption in industry are developed and established**																
5.2.1 Development of a detailed working plan on monitoring, tracking and benchmarking (role and responsibilities, milestones, etc.)																
5.2.2 Design of the GEF project and the national reporting structures																
5.2.3 Development of energy consumption and energy performance indicators reporting templates creation of a reporting website																
5.2.4 Operational and maintenance of the reporting structures during the GEF project implementation period																
5.2.5Reviewed of international energy benchmarking best practices (BESS, BEE-India, Canada, Austria, Japan, Etc.) against the context of the Cambodian manufacturing industry																
5.2.6 Development of energy benchmarking methodology and relevant tools such as data acquisition templates, Excel and / or other software																
5.2.7 Produce a manual (in Khmer and English) on the energy benchmarking methodology developed, including instructions for enterprises.																
5.2.8 Identify and select the manufacturing sector in which to test the energy benchmarking methodology development, including instructions for enterprises																
Output 5.3. National Energy Auditor Accreditation (NEAA) programme is establishedCertification Program is developed and established																
5.3.1 Development of a detailed working/business plan for the development and establishment of the NEAA program (role and responsibilities, milestone, etc)																
5.3.2 Develop policy and legal "pieces and amendments																

"needed for the establishment of the NEAA program																
5.3.3Develop curriculum, content and material for the NEAA program																

ANNEX D, TERMS OF REFERENCE

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

DRAFT

Terms of Reference

Independent Mid Term Evaluation of the UNIDO Project:

Project Number: GFC/CMB/11/001

REDUCE GREEN HOUSE GAS EMISSION THROUGH IMPROVING ENERGY EFFICIENCY IN INDUSTRIAL SECTOR

JUNE, 2013

CONTENTS:

I. Project Background and Overview

Cambodian industry is highly energy inefficient, with energy consumption per unit of output being higher than in many countries in the region and more than double that of the developed countries. On the basis of studies UNIDO is currently carrying out on the rubber refining sector, its the energy consumption is, on an output basis, equivalent to almost double international consumption norms, while the energy consumption levels of rice processing, when compared to international norms, suggests there is a potential for 30% savings. As per IFC energy benchmarking studies in Garment sector (IFC-2009), average energy intensity is 42 GJ/ton of garment produced which is very high compared to comparable Garment sector in the region. In brick kiln as per survey conducted during PPG phase energy intensity per Kg brick fired in Cambodia is 7 MJ compared to 2-2.5 in similar kilns in other Asian countries and 1-1.2 in kiln using Vertical shaft Brick Kiln (VSBK) technology.

As per the National communication-2 (NC-2) draft report, Manufacturing Industries consume large amounts of diesel and fuel oil and certain industries such as the garment, food processing and brick works also consumes large amounts of fuel wood that contributes to deforestation. The mitigation options proposed in NC-2 include energy efficiency reducing emissions by about 20% and technology change that can reduce emissions about 40% for some even up to 70% by substituting fuels.

The project was developed as result of a request from the Minister of Environment of Kingdom of Cambodia to UNIDO to assist in the development and implementation of a GEF Climate Change Project on industrial energy efficiency. UNIDO initiated project design and preparation work under project GF/CMB/002/1101-2010 (Identification of Energy Efficiency Needs in Cambodia) which led to the formulation and submission to the GEF of the Project Information Form (PIF) and Project Preparation Grant (PPG). After approval of the PIF and PPG the design and formulation of the project proposal has been finalized through PPG resources made available by the GEF and Implementing Agency UNIDO.

The goal of the project is to reduce Green House Gas (GHG) emissions and specific energy consumption (SEC) from Cambodian industry. The Objective will be achieved by demonstrating economic and environmental benefits, strengthening institutional capacity and establishing a policy and legal environment that enables and supports sustainable adoption of energy efficient technologies and management as an integral part of industries' business practices.

Primary target groups of the project are industries from 5 selected energy intensive industrial sectors, industry decision-markers, managers, consulting companies/engineers, energy professional, industrial equipment vendors and energy efficiency policy-making and implementing institutions.

The project will provide technical support to Ministry of Industry, Mines & Energy (MIME) to develop and help establish market oriented policy and regulatory instruments needed to support sustainable progression of Cambodian industries towards international best achievable energy performance and to stimulate the creation of a market for industrial energy efficiency (IEE) products and services. The project will build knowledge and in-depth technical capacity for IEE, for focusing on energy management and system optimization, between enterprises, industry and energy efficiency professional and relevant institutions. For climate change mitigation in industries, project will co-ordinate with Climate Change Department (CCD) under Ministry of Environment (MOE).

The project will also provide investments-specific technical assistance, including financial engineering studies and project financing, to support the development and implementation of a limited number of pilot IEE projects with high replication or energy saving potential in key sectors of Cambodian industries food processing, garments, rubber processing, rice processing and brick Kilns.

2. Project objective: The overall objective of the project is to reduce specific energy consumption of industrial production per unit of production leading to net reduction in global greenhouse gas (GHG) emissions. The goal will be achieved through contributing to establishing pilot projects, policy and normative environment that enables and supports sustainable adoption of energy efficient technologies and management as an integral part of industries' business practices; and environment in which a cadre of well-trained and equipped experts in energy management and system optimization assists industries in developing and implementing energy efficiency improvement projects (techniques and technologies).
Demonstration of IEE benefits, Capacity building, institutional strengthening, up-scaling of implementation for IEE and Climate Change mitigation in Cambodian manufacturing sector is a major element of this project. Initially the directly involved partners will be given priority for IEE capacity building and implementation support but gradually other government agencies and the broader society will profit from increasing attention.

In order to achieve this objective, the project will:

- Providing technical and part financial support for Implementation of industrial energy efficiency projects in selected sector to demonstrate financial and environmental benefits of Industrial energy efficiency including reduction in Green house gas (GHG) emissions.
- Building technical capacity within enterprises and in the support institution and market to identify, develop and implement industrial energy efficiency projects and continually improve energy performance. A network of IEE service provider will be established.
- Strengthening of institutional framework for industrial energy efficiency aims to address the capacity building of Government department responsible for IEE promotion, financial institutions to evaluate IEE proposals for financing (total costing incl. environmental and health associated costs)
- Increasing adoption of energy efficiency practices and technologies by Cambodian enterprises as an integral part of their business practices. Compiling a number of case studies for dissemination and scaling up of results.
- Energy efficiency policies: Address the inadequacy of existing policies, institutions and regulatory framework to effectively promote and support industrial energy efficiency

3. Budget Information

Co-financing Committments

SOURCES OF CONFIRMED CO-FINANCING FOR THE PROJECT

Name of Co-financier (source)	*Classification*	*Type*	*Project*	*%* *
1.0 UNIDO	Implementing Agency	In-kind	100,000	3.02
2.0 National Cleaner Production Office-Cambodia (Own Income generation & Seco Phase-2)	Executing Partner	In-kind	140,000	4.23
3.0 Ministry of Industry Mines and Energy	National Government	In-kind	150,000	4.53
4.0 Private sector for IEE Pilot				
4.1– *Lyly Food Industry Co. Ltd.*	Private sector	In-kind	30,000	0.91
		Cash	300,000	9.06
4.2– *Phnom Penh Brewery*	Private sector	In-kind		
		Cash	400,000	12.08
4.3– *GHIM LY (Cambodia) Pte. Ltd.*	Private sector	In-kind		

		Cash	300,000	9.06
4.4– *Sky High (Cambodia) Co., Ltd*	Private sector	In-kind		
		Cash	300,000	9.06
4.5– *Vinh Cheang Rice Mill*	Private sector	In-kind	30,000	0.91
		Cash	400,000	12.08
4.6– *Norm Srim Rice Mill*	Private sector	In-kind	30.000	0.91
		Cash	300,000	9.06
4.7– *Chea Hap Rice Mill*	Private sector	In-kind		
		Cash	100,000	3.02
4.8– *Cam Brique-Lim Company*	Private sector	In-kind		
		Cash	50,000	1.51
4.9– *Buth Sothy Brick Company*	Private sector	In-kind		
		Cash	50,000	1.51
4.10– *Doeung Por Roka Kong Brick Company*	Private sector	In-kind		
		Cash	200,000	6.04
4.11– *Punleu Preah Atit Brick Company*	Private sector	In-kind		
		Cash	50,000	1.51
4.12– *Hong Vanin Co., Ltd.,*	Private sector	In-kind		
		Cash	100,000	3.02
4.13 Miston Export Import Co. Ltd.,**	Private sector	In-kind		
		Cash		
5.0 Quick Scan in 40 enterprises ***	Private sector	Cash & Kind	280,000	8.46
Total Co-financing			**3,310,000**	**100%**

* Percentage of each co-financier's contribution at CEO endorsement to total co-financing.

****** COMMITMENT LETTER FROM MISTON EXPORT IMPORT CO. LTD., IS STILL AWAITED HENCE NOT ACCOUNTED IN CO-FINANCING AT THIS STAGE.

***** COMMITMENT** of 40 units participating in Quick scan were verbal rather than a formal letter like 13 Pilot enterprises

a) Overall Cost and Financing (including co-financing):

	Project Preparation a	*Project b*	*Total c = a + b*	*Agency Fee*	*For comparison: GEF and Co-financing at PIF*
GEF financing	60,000	1,240,000	1,300,000	130,000	1,240,000
Co-financing	60,000	3,310,000	3,370,000		2,640,000
Total	120,000	4,550,000	4,670,000	130,000	3,880,000

b) UNIDO budget (GEF funding including agency support cost):

Table- 6: Project budget (in USD)

Budget Line	Brief Description	Year 1	Year 2	Year 3	Year 4	Project Total
11-45 Investments	Financial support for impl. of IEE pilot projects	$ 180,000	$ 100,000	$ 20,000		$300,000
11-01 long term international expert	Chief * Technical Advisor	$ 54,000	$ 54,000	$ 54,000	$ 54,000	$ 216,000
11-50 short term	Expert inputs	$ 56,000	$ 42,000	$ 28,000	$ 28,000	$ 154,000

international experts	to policy , Energy management & EE technologies					
15-00 project international travel	CTA and national staff	$ 12,000	$ 12,000	$ 12,000	$ 12,000	$ 48,000
National Travel	Project staff, CTA, Experts	$ 10,000	$ 5,000	$ 5,000	$ 5,000	$ 25,000
16-00 UNIDO missions	Staff missions and independent evaluation	$ 10,000			$14,000*	$ 24,000
17-0/ (21.0) national staff	All National experts	$69,000	$ 57,000	$ 57,000	$ 47,000	$ 230,000
33.00 Training/seminars	Trainings & awareness workshops	$ 30,000	$ 24,000	$ 24,000	$ 24,000	$ 102,000
21.00 Insurance &Social security	For project staff and equipment. & property	$4,000	$4,000	$ 4,000	$4,000	$ 16,000
32-00 study tours	Experts and local technology suppliers	$ 15,000	$ 15,000			$ 30,000
45-00 equipment and supplies	Project car, office equipment and field/analytical equipment	$50,000				$ 50,000
51-00 miscellaneous		$ 15,000	$ 10,000	$ 10,000	$ 10,000	$ 45,000
	Subtotal	*$ 508,000*	*$ 320,000*	*$223,000*	*$ 201,000*	*$ 1,240,000*
					Programme Support Costs (10%)	**$ 124,000**
					Total	**$ 1,364,000**

II. Objectives and scope of the evaluation

The purpose of the mid-term evaluation is that the GEF, UNIDO and partners of both countries:
a) review

- Project advances to the achievement of projected GHG mitigation.
- The activities and project results and achievements through their indicators.
- The relevance of objectives and other design elements of the project.

(b) Propose recommendations that would increase efficiency and effectiveness of project activities.
(c) Draw lessons learned in the process to replicate the experience in other projects

III. Methodology

The evaluation will be conducted by UNIDO accordingly to the guidelines and policies of the GEF in an independent manner. This evaluation will take a participatory approach in which project staff will be kept informed and regularly consulted during the evaluation, the evaluation team leader will contact the GEF team for any logistical and methodological basis for properly carry out the review.

The methodology is based on:

1. A review of project documents, including but not limited to: The original project document, monitoring reports, GEF tracking tool, progress and financial conciliatory monthly reports of UNIDO and GEF PIR and annual progress reports on Project Evaluation,, reports of case studies, action plans, national documents like TNA , 2nd NC (National Communication) of MOE and other related materials prepared by the project.

2. The evaluation team could use the models available from (or reconstruct, if necessary) the theory of change for different types of intervention (capacity, investment, demonstration). The validity of the theory of change is examined through specific questions in the interviews and, possibly, through a survey of stakeholders.

3. Counterfactual information: In cases where the background information for the benchmarks is not available the evaluation team will aim at establishing a baseline approach through recall and secondary information.

4. Interviews with the Project Management Unit (PMU), personnel associated with project management, partner country focal points, project beneficiaries, and other surveys, reviews of documents deemed necessary by the evaluation team and/or UNIDO.

5. Interviews with project partners, in particular those that have been selected for co-financing as shown in the corresponding sections of the project documents.

6. On-site observation of results achieved in demonstration projects, including interviews of actual and potential beneficiaries of improved methods, practices and/or technologies.

IV. Project Evaluation Parameters

The ***ratings for the parameters described in the following sub-chapters A to E 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 Annex1.

A. Project relevance and design

Relevance to national development and environmental agendas, recipient country commitment, and regional and international agreements. See possible evaluation questions under "country ownership/driveness" below

Relevance to target groups: relevance of the project's objectives, outcomes and outputs to the different target groups of the interventions (e.g. companies, civil society, beneficiaries of capacity building and training, etc.).

Relevance to the GEF and UNIDO: In retrospect, were the project's outcomes consistent with the focal areas/operational program strategies of GEF? Were they in line with the UNIDO mandate, objectives and outcomes defined in the Programme & Budget and core competencies? Ascertain the likely nature and significance of the contribution of the project outcomes to the wider portfolio of the GEF Operational Programme CC-SP2

Is the project's design adequate to address the problems and issues (local and global) at hand?

Was a participatory project identification process applied and was it instrumental in selecting problem areas and national counterparts?

Does the project have a clear thematically focused development objective, the attainment of which can be determined by a set of verifiable indicators?

Was the project formulated based on the logical framework approach?

Was the project formulated with the participation of national counterpart and/or target beneficiaries?

B. Effectiveness: attainment of objectives and planned results (progress to date).

Assessment of project outcomes should be a priority:

- What outputs and outcomes has the project achieved so far (both qualitative and quantitative results)? Has the project generated any results that could lead to changes of the assisted institutions? Have there been any unplanned effects?
- Are the actual project outcomes commensurate with the original or modified project objectives? If the original or modified expected results are merely outputs/inputs, the evaluators should assess if there were any real outcomes of

the project and, if there were, determine whether these are commensurate with realistic expectations from such projects.

- To what extent have the expected outputs and outcomes been achieved or are likely to be achieved? How do the stakeholders perceive their quality? Were the targeted beneficiary groups actually reached?

- Identify the potential longer-term impacts or at least indicate the steps taken to assess these (see also below "monitoring of long term changes"). Wherever possible, evaluators should indicate how findings on impacts will be reported to the GEF in future.

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- Catalytic or replication effects: the evaluation will describe any catalytic or replication effect of the project. If no effects are identified, the evaluation will describe the catalytic or replication actions that the project carried out. No ratings are requested for the project's catalytic role.

C. Efficiency

Was the project cost effective? Was the project the least cost option? Was project implementation delayed, and, if it was, did that affect cost effectiveness?

Have the donor, UNIDO and Government/counterpart inputs been provided as planned and were adequate to meet requirements? Was the quality of UNIDO inputs and services as planned and timely?

D. Assessment of sustainability of project outcomes.

Sustainability is understood as the likelihood of continued benefits after the GEF project ends. Given the uncertainties involved, it may be difficult to have a realistic a priori assessment of sustainability of outcomes. Therefore, assessment of sustainability of outcomes will give special attention to analysis of the risks that are likely to affect the persistence of project outcomes. This assessment should explain how the risks to project outcomes will affect continuation of benefits after the GEF project ends. It will include both exogenous and endogenous risks. The following four dimensions or aspects of risks to sustainability will be addressed:

- ✓ **Financial risks.** Are there any financial risks that may jeopardize sustainability of project outcomes? What is the likelihood of financial and economic resources not being available once GEF assistance ends? (Such resources can be from multiple sources, such as the public and private sectors or income-generating activities; these can also include trends that indicate the likelihood that, in future, there will be adequate financial resources for sustaining project outcomes.)
- ✓ **Sociopolitical risks.** Are there any social or political risks that may jeopardize sustainability of project outcomes? What is the risk that the level of stakeholder ownership (including ownership by governments and other key stakeholders) will be insufficient to allow for the project outcomes/benefits to be sustained? Do the various key stakeholders see that it is in their interest that project benefits continue to flow? Is there sufficient public/stakeholder awareness in support of the project's long-term objectives?
- ✓ **Institutional framework and governance risks.** Do the legal frameworks, policies, and governance structures and processes within which the project operates pose risks that may jeopardize sustainability of project benefits? Are

requisite systems for accountability and transparency, and required technical know-how, in place?

- ✓ **Environmental risks.** Are there any environmental risks that may jeopardize sustainability of project outcomes? The evaluation should assess whether certain activities will pose a threat to the sustainability of the project outcomes. For example, The destruction of wetlands for the advancement of agriculture, or the presence of meteorological phenomena such as hurricanes and floods that threaten progress related to conservation and restoration of mangroves and thereby increase biodiversity undertaken by the project.

E. Assessment of monitoring and evaluation systems and project management:

- **M&E design.** Does the project have a M&E plan to monitor results and track progress towards achieving project objectives? The Evaluation will assess whether the project met the minimum requirements for the application of the Project M&E plan (see Annex 2) .

- **M&E implementation.** The evaluation should verify that an M&E system was in place and facilitated timely tracking of progress toward project objectives by collecting information on chosen indicators continually throughout the project implementation period; annual project reports were complete and accurate, with well-justified ratings; the information provided by the M&E system was used during the project to improve performance and to adapt to changing needs; and projects had an M&E system in place with proper training for parties responsible for M&E activities to ensure that data will continue to be collected and used after project closure.

- **Budgeting and Funding for M&E activities.** In addition to incorporating information on funding for M&E while assessing M&E design, the evaluators will determine whether M&E was sufficiently budgeted for at the project planning stage and whether M&E was funded adequately and in a timely manner during implementation.

- **Monitoring of Long-Term Changes.** The monitoring and evaluation of long-term changes is often incorporated in GEF-supported projects as a separate component and may include determination of environmental baselines; specification of indicators; and provisioning of equipment and capacity building for data gathering, analysis, and use. This section of the evaluation report will describe project actions and accomplishments toward establishing a long-term monitoring system. The review will address the following questions:
  a. Did this project contribute to the establishment of a long-term monitoring system? If it did not, should the project have included such a component?
  b. What were the accomplishments and shortcomings in establishment of this system?
  c. Is the system sustainable—that is, is it embedded in a proper institutional structure and does it have financing?

- **Project management.** Were the national management and overall coordination mechanisms efficient and effective? Did each partner have specific roles and responsibilities from the beginning? Did each partner fulfill its role and responsibilities (e.g. providing strategic support, monitoring and reviewing performance, allocating funds, providing technical support, following up agreed/corrective actions…)? Were the UNIDO HQ based management, coordination, quality control and technical inputs efficient, timely and effective (problems identified timely and accurately; quality support provided timely and effectively; right staffing levels, continuity, skill mix and frequency of field visits…)

F. Assessment of processes affecting attainment of project results

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

a. **Preparation and readiness.** Were the project's objectives and components clear, practicable, and feasible within its time frame? Were counterpart resources (funding, staff, and facilities), and adequate project management arrangements in place at project entry?

b. **Country ownership/drivenness.** Was the project concept in line with the sectoral and development priorities and plans of the country—Are project outcomes contributing to national development priorities and plans? Were the relevant country representatives from government and civil society involved in the project? Did the recipient government maintain its financial commitment to the project? Has the government approved policies or regulatory frameworks in line with the project's objectives?

c. **Stakeholder involvement.** Did the project involve the relevant stakeholders through information sharing and consultation. Did the project implement appropriate outreach and public awareness campaigns? Were the relevant vulnerable groups and powerful supporters and opponents of the processes properly involved?

d. **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? Was there due diligence in the management of funds and financial audits? Did promised co-financing materialize?

e. **UNIDO supervision and backstopping.** Did UNIDO staff identify problems in a timely fashion and accurately estimate their seriousness? Did UNIDO staff provide quality support and advice to the project, approve modifications in time, and restructure the project when needed? Did UNIDO provide the right staffing levels, continuity, skill mix, and frequency of field visits for the project?

f. **Co-financing and project outcomes and sustainability.** If there was a difference in the level of expected co-financing and the co-financing actually realized, what were the reasons for the variance? Did the extent of materialization of co-financing affect project outcomes and/or sustainability, and, if so, in what ways and through what causal linkages?

g. **Delays and project outcomes and sustainability.** If there were delays in project implementation and completion, what were the reasons? Did the delays affect project outcomes and/or sustainability, and, if so, in what ways and through what causal linkages?

V. Evaluation Team and Timing

The evaluation team will be composed of one international evaluation consultant acting as the team leader and one national evaluation consultant.

UNIDO evaluation group will be responsible for the quality control of the evaluation process and report. It will provide inputs regarding findings, lessons learned and recommendations from other UNIDO evaluations, ensuring that the evaluation report is useful for UNIDO in terms of organizational learning (recommendations and lessons learned) and its compliance with UNIDO evaluation policy and these terms of reference.

The evaluation team will be able to provide information relevant for follow-up studies, including evaluation verification on request to the GEF partnership up to two years after completion of the evaluation.

All consultants will be contracted by UNIDO. The tasks of each team member are specified in the job descriptions attached to these terms of reference.

Members of the evaluation team must not have been directly involved in the design and/or implementation of the programme/projects.

The project staff and the UNIDO Field Office in Cambodia will support the evaluation team. The GEF focal points in the countries and the main Government counterparts of UNIDO will be briefed on the evaluation.

Timing

The evaluation is proposed to take place during the period June-July 2013. The field mission for the evaluation is scheduled for beginning of July, 2013.

After the field mission, the evaluation team leader will present preliminary findings to project- and UNIDO staff. The draft evaluation report will be submitted 6-8 weeks after the presentation of preliminary findings at the latest.

VI. REPORTING

Inception report

This Terms of Reference provides some information on the evaluation methodology but this should not be regarded as exhaustive. After reviewing the project documentation and initial interviews with project manager(s) the International Evaluation Consultant will prepare a short inception report that will operationalize the TOR relating the evaluation questions to information on what type of and how the evidence will be collected (methodology). It will be discussed with and approved by the responsible UNIDO Evaluation Officer. The Inception Report will focus on the following elements: preliminary project theory model(s); elaboration of evaluation methodology including quantitative and qualitative approaches through an evaluation framework ("evaluation matrix"); division of work between the International Evaluation Consultant and National Consultant; and a reporting timetable[11].

Evaluation report format and review procedures

The evaluation 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 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 and follow the outline given in annex 3.

The evaluation report shall follow the structure given in annex 3. The reporting language will be English.

Review of the Draft Report: Draft reports submitted to UNIDO Evaluation Group are shared with the corresponding Programme or Project Officer for initial review and consultation. 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. The evaluators will take the comments into consideration in preparing the final version of the report.

Quality Assessment of the Evaluation Report: All UNIDO evaluations are subject to quality assessments by UNIDO Evaluation Group. These apply evaluation quality assessment criteria and are used as a tool for providing structured feedback. The quality of the evaluation report will be assessed and rated against the criteria set forth in the Checklist on evaluation report quality (annex 4).

[11] The evaluator will be provided with a Guide on how to prepare an evaluation inception report prepared by the UNIDO Evaluation Group.

The draft report will be delivered to UNIDO and circulated to UNIDO staff associated with the project, including the UNIDO regional office Bangkok.

Annex 1. Required Project Identification and Financial Data

The evaluation report should provide information on project identification, time frame, actual expenditures, and co-financing in the following format, which is modeled after the project identification form (PIF).

I. Project general information:

Project Name:	Reducing Greenhouse Gas Emissions through Improved Energy Efficiency in the Industrial Sector
Project's GEF ID Number:	**3976**
GEF Agency Project ID	**GF/CMB/002/1101-2010**
Countries:	**Cambodia**
GEF Focal Area and Operational Program:	**GEF FOCAL AREA:** Climate Change **GEF-4 STRATEGIC PROGRAM:** CC-SP2
Agency:	**UNIDO**
Other Cooperating Agencies:	Cambodia Cleaner Production Office (hosted by the Ministry of Industry, Mines & Energy (MIME))
Project Approval Date:	**July, 2010**
Date of Project Effectiveness:	**November, 2010**
Projet duration:	**Four years**
Total Project Cost:	**US $ 4,670,000**
GEF Grant Amount:	**USD 1,240,000 + 124,000 (support cost)**
GEF Project Preparation Grant Amount (if any):	**US$ 60,000 +6,000 (support cost)**

II. Dates

Milestone	Expected Date	Actual Date
Agency Approval date	**July, 2010**	**July.2010**
Implementation start	**November, 2010**	**November, 2010**
Midterm evaluation	**December, 2012**	**June, 2013**
Project completion	**November, 2014**	**November, 2014**
Terminal evaluation completion	**January 2015**	**Jan-Feb, 2015**
Project closing	**February, 2015**	**February, 2015**

III. Project Framework

Project Component	Activity Type	GEF Financing (in $)		Cofinancing (in $)	
		Approved	Actual	Promised	Actual
Investments	a	300,000		3,310,000	
T.A	b	600,000		180,000	
T.A	c	118,000		20,000	
T.A	d	127,000		60,000	
Equipment & Misc.& Management		95,000		150,000	
Total		**1,24,000**		**3720,000**	

Activity types are:

a) Investment in implementation of IEE measures both from GEF and Co-financing commitments from private sector b) International and National experts
c) Technical assistance, intensive training, Workshop, Meetings or experts consultation, IEE Clinics,
d) travel National and International, Study tours .

IV. Co-financing

Co-financing Sources				
Name of co-financier (source)	Classification	Type	Amount ($)	Status
MIME	National Government	In kind	150,000	Confirmed
NCPO_C	Executing partner	Kind & Cash	140,000	Confirmed
UNIDO	GEF IMP Agency	In -Kind	100,000	Confirmed
Private sector	Companies	In kind & cash	3,310,000	Confirmed
Sub-total co-financing			3,720,000	

Expected amounts are those submitted by the GEF Agencies in the original project appraisal document. Co-financing types are grant, soft loan, hard loan, guarantee, in kind, or cash.

Annex 2 - GEF Minimum requirements for M&E[12]

Minimum Requirement 1: Project Design of M&E

All projects will include a concrete and fully budgeted monitoring and evaluation plan by the time of work program entry for full-sized projects and CEO approval for medium-sized projects. This monitoring and evaluation plan will contain as a minimum:

- SMART 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, indicators identified at the corporate level;
- baseline for the project, with a description of the problem to be addressed, with indicator data, or, if major baseline indicators are not identified, an alternative plan for addressing this within one year of implementation;
- identification of reviews and evaluations that will be undertaken, such as mid-term reviews or evaluations of activities; and
- organizational set-up 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:

- SMART indicators for implementation are actively used, or if not, a reasonable explanation is provided;
- SMART indicators for results are actively used, or if not, a reasonable explanation is provided;
- the baseline for the project is fully established and data compiled to review progress reviews, and evaluations are undertaken as planned; and
- the organizational set-up for M&E is operational and budgets are spent as planned.

[12] http://gefeo.org/uploadedFiles/Policies_and_Guidelines-me_policy-english.pdf

Annex 3 - Outline of an in-depth project evaluation report

Executive summary

- Must provide a synopsis of the storyline which includes the main evaluation findings and recommendations
- Must present strengths and weaknesses of the project
- Must be self-explanatory and should be 3-4 pages in length

I. Evaluation objectives, methodology and process

- Information on the evaluation: why, when, by whom, etc.
- Scope and objectives of the evaluation, main questions to be addressed
- Information sources and availability of information
- Methodological remarks, limitations encountered and validity of the findings

II. Countries and project background

- Brief countries context: an overview of the economy, the environment, institutional development, demographic and other data of relevance to the project
- Sector-specific issues of concern to the project[13] and important developments during the project implementation period
- Project summary:
  - Fact sheet of the project: including project objectives and structure, donors and counterparts, project timing and duration, project costs and co-financing
  - Brief description including history and previous cooperation
  - Project implementation arrangements and implementation modalities, institutions involved, major changes to project implementation
  - Positioning of the UNIDO project (other initiatives of government, other donors, private sector, etc.)
  - Counterpart organization(s)

III. Project assessment

This is the key chapter of the report and should address all evaluation criteria and questions outlined in the TOR (see section III Evaluation Criteria and Questions). Assessment must be based on factual evidence collected and analyzed from different sources. The evaluators' assessment can be broken into the following sections:

G. Design

H. Relevance (Report on the relevance of project towards countries and beneficiaries)

I. Effectiveness (Report the achievement of Transboundary Diagnostic Analysis (TDA), field pilot projects, program outreach, and overall impacts commensurate with project objectives and catalytic effects)

J. Efficiency (Report on the overall cost-benefit of the project and partner Countries contribution to the achievement of project objectives)

K. Sustainability (Report on the risks and vulnerability of the project, considering the likely effects of sociopolitical and institutional changes in

[13] Explicit and implicit assumptions in the logical framework of the project can provide insights into key-issues of concern (e.g. relevant legislation, enforcement capacities, government initiatives, etc.)

partner countries, and its impact on continuation of benefits after the GEF project ends)

L. Project coordination and management (Report the current conditions of project M&E implementation, project management conditions and achievements, relevance of partner countries participation)

G. (Report on project management conditions, country ownership, stakeholder involvement, partner countries commitment, implementation agency support, and project outcomes benefits and impacts)

At the end of this chapter, an overall project achievement rating should be developed as required in Annex 5. The overall rating table required by the GEF should be presented here.

IV. Conclusions, Recommendations and Lessons Learnt

This chapter can be divided into three sections:

D. Conclusions

This section should include a storyline of the main evaluation conclusions related to the project's achievements and shortfalls. It is important to avoid providing a summary based on each and every evaluation criterion. The main conclusions should be cross-referenced to relevant sections of the evaluation report.

E. Recommendations

This section should be succinct and contain few key recommendations. They should:

- be based on evaluation findings
- realistic and feasible within a project context
- indicate institution(s) responsible for implementation (addressed to a specific officer, group or entity who can act on it) and have a proposed timeline for implementation if possible
- be commensurate with the available capacities of project team and partners
- take resource requirements into account.

Recommendations should be structured by addressees:

- UNIDO
- Government and/or Counterpart Organizations
- Donor

F. Lessons Learnt

- Lessons learned must be of wider applicability beyond the evaluated project but must be based on findings and conclusions of the evaluation
- For each lessons the context from which they are derived should be briefly stated

Annexes should include the evaluation TOR, list of interviewees, documents reviewed, a summary of project identification and financial data, and other detailed quantitative information. Dissident views or management responses to the evaluation findings may later be appended in an annex.

Annex 4 - Checklist on evaluation report quality

Report quality criteria	UNIDO Evaluation Group Assessment notes	Rating
A. Did the report present an assessment of relevant outcomes and achievement of project objectives?		
B. Were the report consistent and the evidence complete and convincing?		
C. Did the report present assessment the sustainability of outcomes or did it explain why this is not (yet) possible?		
D. Did the evidence presented support the lessons and recommendations?		
E. Did the report include the actual project costs (total and per activity)?		
F. Quality of the lessons: Were lessons readily applicable in other contexts? Did they suggest prescriptive action?		
G. 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?		
H. Was the report well written? (Clear language and correct grammar)		
I. Were all evaluation aspects specified in the TOR adequately addressed?		
J. Was the report delivered in a timely manner?		

Ratingsystemforqualityofevaluationreports
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. 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		
Ecological		
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		
UNIDO specific ratings		
Quality at entry		
implementation approach		
UNIDO 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

Sustainability will be understood as the probability of continued long-term outcomes and impacts after the GEF 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 beyond project completion. 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.

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 6. Job Descriptions

Job Description

Post title International Evaluation Consultant

Duration 30work days

Started date 20th June, 2013

Duty station Home based, Vienna and Cambodia

Duties

THE CONSULTANT WILL EVALUATE THE PROJECTS ACCORDING TO THE TERMS OF REFERENCE. S/HE WILL ACT AS LEADER OF THE EVALUATION TEAM AND WILL BE RESPONSIBLE FOR PREPARING THE DRAFT AND FINAL EVALUATION REPORT, ACCORDING TO THE STANDARDS OF THE UNIDO EVALUATION GROUP. S/HE WILL PERFORM THE FOLLOWING TASKS:

Main duties	Duration/ location	Deliverables
Review project documentation and relevant country background information (national policies and strategies, UN strategies and general economic data…); determine key data to collect in the field and prepare key instruments (questionnaires, logic models…) to collect these data through interviews and/or surveys during and prior to the field missions	Continuously	List of detailed evaluation questions to be clarified; questionnaires/ interview guide; logic models; list of key data to collect, draft list of stakeholders to interview during the field missions
Briefing with the UNIDO Evaluation Group, project managers and other key stakeholders.	Continuously	Interview notes, detailed evaluation schedule and list of stakeholders to interview during the field missions Division of evaluation tasks with the National Consultant
Prepare inception report and discuss with UNIDO EVA	Continuously	Inception report
Conduct field mission to the Cambodia in July 2013	Continuously	Presentations of the evaluation's initial findings, draft conclusions and recommendations to stakeholders in Mexico at the end of the missions. Agreement with the National Consultant on the structure and content of the evaluation report and the distribution of writing tasks

Main duties	Duration/ location	Deliverables
Present overall findings and recommendations to the stakeholders at UNIDO HQ (incl. travel)	Continuously	Presentation slides
Prepare the evaluation report according to TOR and template provided by UNIDO EVA Coordinate the inputs from the National Consultant and combine with her/his own inputs into the draft evaluation report	Continuously	2 Draft evaluation report Brief input report to country evaluation
Revise the draft project evaluation reports based on comments from UNIDO Evaluation Group and stakeholders and edit the language and form of the final version according to UNIDO standards	Continuously	Final evaluation report
TOTAL	**30 days**	

Qualifications and skills:

- ✓ Advanced degree in environmental science, energy management, development studies or related areas
- ✓ *Knowledge of and experience in Industrial energy efficieny and resource efficiency*
- ✓ *Knowledge and experience in the field of evaluation (of development projects)*
- ✓ Experience in GEF projects and knowledge of UNIDO activities an asset
- ✓ Working experience in LDC's.

Language: English

Absence of Conflict of Interest:
According to UNIDO rules, the consultant must not have been involved in the design and/or implementation, supervision and coordination of and/or have benefited from the programme/project (or theme) under evaluation. The consultant will be requested to sign a declaration that none of the above situations exists and that the consultants will not seek assignments with the manager/s in charge of the project before the completion of her/his contract with the Evaluation Group.

Job Description

Post title National Evaluation Consultant

Duration 15 work days

Started date 1st July, 2013

Duty station Home based, travel within Cambodia

Duties

THE CONSULTANT WILL PARTICIPATE AND CONTRIBUTE TO THE PROJECT EVALUATION ACCORDING TO THE EVALUATION TERMS OF REFERENCE. S/HE WILL BE A MEMBER OF THE EVALUATION TEAM, WORK UNDER THE SUPERVISION OF THE INTERNATIONAL EVALUATION CONSULTANT AND CARRY OUT THE TASK ASSIGNED TO HIM/HER BY THE INTERNATIONAL EVALUATION CONSULTANT, INCLUDING THE FOLLOWING TASKS:

Main duties	Duration/ location	Deliverables
Review project documentation and relevant country background information (national policies and strategies, UN strategies and general economic data…) Support the project management and the Cambodia UNIDO desk office in planning the evaluation field mission and contacting concerned organizations to prepare the evaluation program	Continuously	List of detailed evaluation questions to be clarified Evaluation mission programme
Carry out meetings, visits and interviews of stakeholders according to the evaluation program and facilitate the work of the evaluation team in the Cambodia(including acting as interpreter if necessary) Participate in drafting the main conclusions and recommendations, and present them to stakeholders in accordance with the instructions of the International Evaluation Consultant	Continuously	Notes, tables; information gathered on issues specified in TOR Draft conclusions and recommendations to stakeholders
Contribute to the draft report as assigned by the International Evaluation Consultant	Continuously	First draft of chapters on the country background and other inputs into the draft evaluation report as agreed with the International Evaluation Consultant
Revise the draft chapters based on comments from UNIDO Evaluation Group and stakeholders	Continuously	Final evaluation report

Main duties	Duration/ location	Deliverables
TOTAL	**15 days**	

Qualifications:

- ✓ Advanced degree in environmental science, development studies or related areas
- ✓ ***Knowledge of and experience in industrial resource efficiency incl. energy efficiency***
- ✓ Familiarity with the institutional context of the project (environmental authorities, NGOs, etc.)
- ✓ Experience in evaluation of environmental projects
- ✓ Knowledge of GEF and UNIDO technical cooperation activities an asset.

Language: English and Khmer

Absence of Conflict of Interest:

According to UNIDO rules, the consultant must not have been involved in the design and/or implementation, supervision and coordination of and/or have benefited from the programme/project (or theme) under evaluation. The consultant will be requested to sign a declaration that none of the above situations exists and that the consultants will not seek assignments with the manager/s in charge of the project before the completion of her/his contract with the Evaluation Group.