Global Environment Facility

GEF

MOHAMED T. EL-ASHRY
CHIEF EXECUTIVE OFFICER
AND CHAIRMAN

November 18, 1999

Dear Council Member:

I am writing to notify you that UNDP, the Implementing Agency for the project entitled, *Kenya: Removal of Barriers to Energy Conservation and Energy Efficiency in Small and Medium Scale Enterprises,* has submitted the proposed project document for CEO endorsement prior to final approval of the project in accordance with UNDP procedures. We have today posted the proposed project document on the GEF website at www.gefweb.org.

Over the next four weeks, the Secretariat will be reviewing the project document to ascertain that it is consistent with the proposal included in the work program approved by the Council in October 1998, and with GEF policies and procedures. The Secretariat will also ascertain whether the proposed level of GEF financing is appropriate in light of the project's objectives.

If by December 16, 1999, I have not received requests from at least four Council Members to have the proposed project reviewed at a Council meeting because in the Member's view the project is not consistent with the Instrument or GEF policies and procedures, I will complete the Secretariat's assessment with a view to endorsing the proposed project document.

If you do not have access to the Web, you may request the local field office of UNDP or the World Bank to down load the document for you. Alternatively, you may request a copy of the document from the Secretariat. If you make such a request, please provide us with your current mailing address.

Sincerely,

for Mohamed T. El-Ashry
Chief Executive Officer
and Chairman

cc: Alternates, Implementing Agencies, STAP

GEF SECRETARIAT, 1818 H STREET NW, WASHINGTON, DC 20433 USA
TELEPHONE (202) 473 3202 FAX (202) 522 3240/3245

United Nations Development Programme
GLOBAL ENVIRONMENT FACILITY (GEF)

9 September, 1999

Dear Mr. El-Ashry, Mohamed :

Subject: **KEN/99/G31/A/1G/31 – Removal of Barriers to Energy Conservation and Energy Efficiency in Small and Medium Scale Enterprises**

I am pleased to enclose the project entitled **"Removal of Barriers to Energy Conservation and Energy Efficiency in Small and Medium Scale Enterprises"** approved by the GEF Executive Council in October 1998.

As per paragraph 29 and 30 of the GEF Project Cycle, we are submitting this project to you for circulation to the Executive Council Members for comments and, subsequently, for your final endorsement.

Thank you in advance for expediting the review and approval of this project.

Yours sincerely,

Rafael Asenjo
Executive Coordinator

Mr. Mohamed El-Ashry
Chief Executive Officer
Global Environment Facility
Room G6005
1776 G Street
Washington, D.C. 20433
PM

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Removal of Barriers to Energy Conservation and Energy Efficiency in Small and Medium Scale Enterprises (SME) in Kenya

(Response to GEF Council and GEF Secretariat Comments)

The project was approved by the GEF Council at its meeting October 16, 1998 with several Council Members indicating concern regarding impediments to the successful implementation of the project. UNDP, as the GEF Implementing Agency, indicated that a number of provisions will be included in the final project document submitted for CEO endorsement to ensure that the project achieves its ultimate objectives. Principally, UNDP has designed an institutional arrangement that provides a high likelihood of success and assures a high degree of accountability. UNOPS will be the Executing Agency in conjunction with the Government of Kenya. In addition, UNIDO will be contracted as Cooperating Agency for specific activities. The Ministry of Industrial Development will be the National Implementing Agency through the Kenya Association of Manufacturers.

Following are specific comments from the Council members, and including a discussion of how these comments are addressed in the Project Document.

1. **Indicate the extent of expected increase in profits for SME enterprises resulting from the energy demand reduction.** The project will cover the learning curve costs and other transaction costs to engender confidence among SME that the calculated energy saving benefits will actually increase their profits by reducing operating costs. This will occur through workshops and demonstration investment projects. The data in Table 2 of Annex 7 indicate a required investment in energy saving measures of 4.6 billion KSH (USD 80 million) at 20% market penetration. This will result in annual energy cost savings of 1.3 billion KSH (USD 22 million per year).

2. **Conduct a study to assess the commitment of SME to participate.** The project has been developed to follow-on previous donor supported activities. Many of the SME which participated in these prior projects continue to implement energy efficiency measures in their enterprises even after the donor support. This indicates self-motivation to improve energy efficiency on an economic basis within enterprises which are sensitized to the potential. The activities under Output 1.1 of the project include several assessments of the SME sub-sectors that will be used to finely define the project activities and target those SME which exhibit the greatest prospect for successful implementation and sustainability. The assessments will be updated annually and the project stategy will be adjusted according to the results. In response to Council member concern, this activity has been expanded to address the need to motivate key SME decision makers.

3. **Successful implementation will require qualified energy professionals.** The Terms of Reference for the project staff are in Annex 2 of the Project Document. The PMU will be staffed by qualified Kenya national professionals who will work with

internationally recruited experts. A number of Kenyan private sector enterprises employ qualified energy specialists. It is assumed that these individuals will contribute by imparting their experience to the project either through formal engagement or through participation in the workshops and seminars. The project implementation plan is designed to develop capacity within Kenya to continue the energy efficiency activities beyond the project period. For example, the Chief Technical Advisor will be in place full-time during the first two years and then provide back-stopping thereafter. The targeted output of the CTA will be to develop national capability to effectively manage and direct energy efficiency activities.

4. **Capacity building and institutional strengthening are required for sustainability.** Training will be provided to the PMU national staff and to SME owners and operators. The internationally recruited specialists will provide training in technical, economic and financial issues. In addition, the project will rely on the expertise to be provided by UNIDO which will focus on energy technology development and energy auditing. Training course outlines are provided in Annex 4. The institutional arrangement is described in Section B.4 and the role and structure of the Project Steering Committee is described in Annex 3. Increasing energy costs, related partly to GOK liberalization policies, are being noticed by many SME. They are increasingly seeking advice on how to reduce their energy expenditures as well as improve their competitiveness. The project is market oriented and a key result will be increased awareness of the simplicity with which energy efficiency measures can be implemented as well as increased knowledge regarding how to implement energy efficiency measures. Sustainability will be ensured through demonstration of successful projects. It will be a strategic focus of the project to highlight "success factors" as opposed to the more mundane "lessons learned".

5. **Indicate how the institutional capacities and continuity of established networks will be sustained.** The Network of Energy Auditors (NEA) will work beyond the project on a fee-for-service basis. In parallel, the project will enable the emergence of Energy Service Companies (ESCOs) which will provide complete energy saving services including implementation of energy saving measures and follow-up monitoring and evaluation. The Energy Efficiency Network (EEN) will be supported by industry members and by government departments. The data collected will be useful for the government in maintaining its energy databases and in formulating policy. The guidelines for the establishment and operation of the EEN are in Annex 5.

6. **Provide convincing argument that the set targets can be achieved.** The end-of-project situation (Section B.2) addresses the principal outputs of the project and indicates the context within which successful project completion will be achieved. The outputs and activities have been revised to focus more clearly on achieving the anticipated results.

7. **Include sufficient monitoring as part of project implementation.** The PSC will meet at least every 3 months and there will be a tripartite review meeting every 6 months. In

addition, the national Energy Task Force meets every month to review all energy projects. The UNDP Country Office will monitor project progress on a regular basis and ensure that project deliverables are being produced. Disbursement of funds by UNDP Country Office will be on a performance basis. The monitoring structures are described in Section H and Annex 3 of the Project Document.

8. **There is concern that there will not be sufficient income to sustain ESCOs providing services to SME.** This is a good point. The project now addresses this in several ways. First, it is important to note that there are only a handful of large enterprises in Kenya. Therefore, the SME definition by KAM would allow most formal sector enterprises to be included in the project. Second, while the project cannot guarantee ESCO creation, the activities will create a favorable environment for the emergence of ESCOs. In particular, Kenyan entrepreneurs will work directly with internationally established ESCOs which will come to Kenya to assist with marketing these services. During project preparation, meetings were held with a Kenyan company which is working as a franchise of a U.S. based ESCO. Activities are limited to electricity use. The Kenyan company is optimistic that this can develop into a sustainable modest professional engineering business.

9. **Include dissemination of information on success stories.** In addition to the dissemination activities within the Component 1 workshops and seminars and courses, KAM will establish an "energy award" to be presented at the annual banquet.

10. **Clarify where incremental costs arise if the project is economically viable.** The selected investment projects will be economically viable after learning curve costs are removed. Under Component 1, the project will support activities that increase the awareness of SME operators of both the economic and environmental benefits of improving energy efficiency. This will create demand for the services of energy professionals and enable an increase in sustainable business activity. Under Component 2, SME will be trained to prepare bankable project proposals and learn how to obtain financing through local financial institutions. Under the Component 3 demonstration projects, cost and energy monitoring routines will be introduced to SME and they will learn how improved operating procedures that enable recovery of their investments in energy efficiency. Under Component 4, energy service providers and other institutions will be strengthened to be able to support investments in energy efficiency. In summary, under the baseline conditions, the limited human resource base, the weak institutional structure, and the limited capabilities of the financial sector to evaluate and provide loan financing for energy efficiency investments will continue to contrain the energy efficiency of the SME sector. The cost of the reinforcing activities to overcome these learning curve barriers is above the energy efficiency investment costs in a mature energy efficiency environment .Under the project case, the identified barriers are removed and energy efficiency investments begin to occur. The activities that will be undertaken with GEF support, are therefore designed to accelerate the uptake of energy efficiency within the SME business community.

11. **Clarify the future role of KAM.** It is recognized that KAM is not the obvious long-term location for a profit motivated private sector provider of professional energy services. Therefore, it is anticipated that the PMU will become an independent organization in the latter years of the project. This mechanism is discussed under the institutional arrangements in Section B.4. The corporate mission of KAM is described in Annex 15.

12. **Explain the principles applying to the investment financing package.** The project will cover transaction and learning curve costs. No equipment or other investment subsidies will be provided. The underlying principle is that SME will learn to invest in economically viable projects which improve their competitiveness.

13. **Define the enabling mechanism.** The project will target specific industrial and commercial sub-sectors (e.g. textile, tea, hotels). This will facilitate involvement of enterprises which can be reached through their respective associations (e.g. Kenya Association of Hotelkeepers and Caterers), and it will also facilitate information exchange and the establishment of the Energy Efficiency Network (see activities for output 2.1). However, cross-sectoral measures will also be addressed, particularly in capacity building of energy auditors and other energy professionals.

14. **Specify how ESCOs will work with SME.** The ESCOs will provide energy services to the SME on a cost recovery basis through negotiated contracts. Internationally established ESCOs will assist local firms to identify appropriate SME and develop energy service procedures. During project preparation, one emerging ESCO was identified. This company is providing energy saving consultancy for payment related to the energy savings obtained. The Director of this new ESCO is a former KAM chairman.

15. **Address governance concerns.** The UNDP Country Office is carrying out many successful projects and programmes in Kenya. This is mainly due to the strict monitoring and evaluation systems in place. The monitoring and evaluation systems require that all Project Coordinators and Programme Advisors submit quarterly work plans and progress reports, government disbursement reports, and annual and mid-year review reports. Furthermore, tripartite review meetings are held at least once every year. All of these requirements are incorporated in the project document. Furthermore, special monitoring measures have been established such as the Energy Task Force with members from the private sector, government, NGOs, and UNDP. As stated in the project document, the task force will monitor implementation on a monthly basis. In addition, UNDP and UNOPS will manage the foreign accounts.

Responses to additional comments

A. **The attempted future role of the executing agency for energy efficiency should be made clearer.** The executing agency for the UNDP project will be UNOPS. The national implementing agency will be the Ministry of Industrial Development through the Kenya Association of Manufacturers. The UNDP Project Document responds to the Host Country Strategy (Section A.2) to "...encourage private sector participation in the delivery of energy efficiency improvement measures". Prior projects (Section A.3) have developed capacity at KAM to deliver energy efficiency services. The performance indicators under the End-of-Project Situation (Section B.2) emphasise that the project will enable the emergence of private sector entrepreneurs that will deliver energy efficiency services on a fee-for-service basis. The role of KAM is further indicated in Section B.4 and Annex 15 as described in item 11 abvove.

B. **The appraisal should explain the principles applying to the investment financing package (the assumed level of private [cofinancing] investments does not seem realistic).** The underlying principle is that SME will learn to invest in economically viable projects which improve their competitiveness. The anticipated long-term total investment in energy efficiency activities is estimated to be 4,600 mKSh (USD 65m) -- (see Annex 7). A review of the results of energy efficiency investments in previous projects (see Annex 12) highlights that 5 SMEs invested USD 2.5m in profitable energy efficiency measures. The target of USD 4m to be invested by SMEs during the next five years under this project appears reasonable.

C. **The enabling mechanism should be defined (it would also be preferable to apply a sector approach rather than a product one).** The establishment of the Energy Efficiency Network (EEN) under Activities for Output 2.1 and elaborated in Annex 5 will provide for a sector approach.

D. **The feasibility studies should also provide details on the ESCOs' actual market and on their role (how will ESCOs work with SMEs?).** This is addressed in the Project Document under Immediate Objectives 3 and 4 as well as described in items 8 and 14 above.

E. **Institutionalization of training capacity should be given special attention, incl. provisions that trainers for the developed courses will be trained, that a mechanism for financing this training is found and that the such training is institutionally well established in an appropriate organization.** The training will be provided under all four project components described in Section D of the Project Document and it will be financed under budget items 31 and 32. KAM will recruit services from the Federation of Kenya Employers (FKE) who have successfully been delivery training and extension services through UNIDO (and other) supported activities.

F. **Training that is oriented towards certain branches, i.e. more specific and therefore better accepted by the enterprises, should be taken into consideration.** The training that will be provided as described in Annexes 4 and 5 is deemed sufficient to respond to the anticipated needs. The assessments to be conducted under Immediate Objective 1 will identify if more specific training is required.

G. **It is urged that a different executing agency be selected and that disbursement be conditioned on implementation of key pricing and structural reforms in the energy sector.** The project will be executed by UNOPS. See also point 15 above.

H. **More comments on execution:**

As Executing Agency, UNOPS will be wholly responsible for the financial and administrative management of the entire project. In carrying out its functions, UNOPS will apply the rules and regulations of the UN System, with regards to all aspects of project implementation, in order to ensure transparency and best value for money. No disbursement of funds will be made until full and proper justifications have been made for all expenditures. It is against UNOPS financial rules to provide advances, so all payments will be made only after services have been received, which provides an additional safeguard. Only the Executing Agency, the UNDP field office and the Chief Technical Adviser, when appointed, will have authority to disburse funds. No funds will be provided to the government for its direct disbursement under this project.

UNITED NATIONS DEVELOPMENT PROGRAMME
Project of the Government of Kenya
Project Document

Project Budget Number KEN98G31/A/1G/31

Project Title: Removal of Barriers to Energy Conservation and Energy Efficiency in Small and Medium Scale Enterprises

Project Short Title: KAM

Estimated Start Date: 01/11/1999

Estimated End Date: 01/11/2004

Executing Agent: UNDP Office for Project Services (UNOPS)

Government Coop. Agency: Ministry Of Industrial Development through the Kenya Association of Manufacturers (KAM)

Executting Agent(s): UNOPS

Project Site: Kenya

LPAC Approval Date: 17/03/1999

BPAC Approval Date: 23/07/1999

Programme Officer:

Summary of UNDP & COST Sharing Inputs (as per attached budgets)

		REV A Current	Previous:	Change:
UNDP:				
TRAC (1&2)	$	540,000	0	
TRAC (3)	$	0	0	0
STS	$	0	0	0
Other (GEF)	$	2,949,418	0	0
Cost Sharing:				
Government	$	0	0	0
Financial Inst.		0	0	0
Third Party	$	4,590,000	0	0
TOTAL	**$**	**8,079,418**	0	0
Administrative and Operation Services (where applicable)				
SOF 03	$	0	0	0
SOF 07	$	0	0	0
Other (GEF)	$	243,582	0	
Cost Sharing	$		0	
TOTAL	**$**	**8,323,000**	0	

Classification Information:

DCAS SECTOR & SUB-SECTOR:
- 8 Energy
- 51 Energy conservation

ACC SECTOR & SUB-SECTOR:
- 05 Energy
- 10 Energy Planning and Conservation

PRIMARY AREAS OF FOCUS/SUB-FOCUS:
- 03 Environmental Resources
- 21 Promotion of Sustainable Energy and Atmospheric Quality

SECONDARY AREAS OF FOCUS/SUB-FOCUS:
- ---

PRIMARY TYPE OF INTERVENTION:
1. Capacity-building
2. Technology Adaptation

SECONDARY TYPE OF INTERVENTION:
- ---
- ---

PRIMARY TARGET BENEFICIARIES
- 2 Target Organizations
- 6 Non-Government
- 42 Private Sector

SECONDARY TARGET BENEFICIARIES:
- ---

Brief Description

The outcome of this project will be a reduction of CO_2 emissions resulting from increased energy efficiency within Kenya's small and medium scale enterprises. This will be accomplished by removing capacity and financial barriers through formal and on the job training as well as through the introduction of new financial mechanisms. A series of demonstration retrofit projects will be carefully selected, and financing obtained to complete the energy efficiency demonstrations. Full cost recovery for the demonstrations will be ensured to prove to SME in Kenya that improving energy efficiency can be profitable. The project will enable entrepreneurial energy and engineering firms to emerge as viable energy service companies (ESCOs) which will be prepared to carry out investments in improved energy efficiency on a sustained basis

On behalf of:	**Signature**	**Date**	**Name/Title**
Government:			
Executing Agent:			
UNDP:			

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Acronyms

CAN	Climate Network Africa
CTA	Chief Technical Advisor
DET	Department of External Trade
EEN	Energy Efficiency Network
EPC	Export Promotion Council
ESCO	Energy Service Company
ESID	Economically Sustainable Industrial Development
FAN	Forest Action Network
FKE	Federation of Kenya Employers
GEF	Global Environment Facility
GHG	Greenhouse Gas
IFC	International Finance Corporation
IPMVP	International Performance Monitoring and Verification Protocol
JKE	Jua Kali Enterprises
KAM	Kenya Association of Manufacturers
KEDS	Kenya Export Development Support
KEMP	Kenya Energy Management Programme
KenGen	Kenya Electricity Generating Company
KENGO	Kenya Energy Organization
KGC	Kenya Generation Company
KIRDI	Kenya Industrial Research and Development Institute
KPLC	Kenya Power & Lighting Company
MoE	Ministry of Energy
MoEC	Ministry of Environmental Conservation
MoF	The Ministry of Finance (Treasury)
MoID	Ministry of Industrial Development
MoNR	Ministry of Natural Resources
MoP	Ministry of Planning and National Development
NIC	Newly Industrialized Country
NIDC	National Industrial Development Council

NPD	National Project Director
PMU	Project Management Unit
PPER	Project Performance Evaluation Report
PSC	Project Steering Committee
PTA	Preferential Trade Area
RLA	Reimbursable Loan Agreement
SME	Small and Medium Scale Enterprises
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNIDO	United Nations Industrial Development Organization
UNOPS	United Nations Office for Project Services
WB	World Bank

A. Context

A.1 Description of the Country and Subsectors

Kenya's energy scenario is dominated by a high degree of dependence on imported petroleum products. Combustion of petroleum products constitutes the predominant energy source in Kenyan small and medium scale enterprises (SME), accounting for 780,000 toe in 1996 -- and projected to double by the year 2020. The high cost of petroleum products coupled with inefficient energy technologies result in high manufacturing costs making Kenya's products less competitive internationally. In addition, Kenyan manufacturers are facing increased competition from lower priced imports. Electricity is the second most important source of commercial energy, with installed capacity of 810 MW. Development plans for the next 15 years indicate that additional capacity of 1300 MW will be required.

In the conduct of various projects in Kenya SME in recent years, observed estimates of energy waste range between 10% and 55% of primary energy input. By enhancing energy efficiency awareness and removing financial barriers, the project will enable investments in energy efficiency and improve international competitiveness of SME. The associated energy demand reduction will increase profits and allow the expansion of existing industries, thereby alleviating the acute unemployment problem. This is consistent with GOK policy as stated in the programme on Poverty Alleviation and further reinforced in Programme Support Document KEN/99/200 on Environment and Natural Resource Management within the UNDP Country Cooperation Framework.

A.2 Host Country Strategy

The Government of Kenya accords a high priority to the development of the energy sector in a cost-effective and environmentally sustainable manner. It established the National Environment Action Plan (NEAP) in 1994 as per the Agenda 21 recommendations. It has just published the Environment Management and Co-ordination Bill. This project is part of the implementation of NEAP process. The project will also assist industry to meet their requirements under Environment Management and Co-ordination Bill when it becomes an Act of Parliament.

Implementation of demand-side energy efficiency improvements is among the strategic development objectives in the industrial sector. In order to achieve this energy efficiency, the Government: i) promotes energy audits of commercial and industrial enterprises; ii) is developing demand-side energy efficiency management programmes; iii) makes information available regarding the efficient use of energy and cost-effective technologies; and iv) encourages private sector participation in the delivery of energy efficiency improvement measures.

In the past, investment in energy efficiency has been impeded by the historically low power tariffs and price control on petroleum products. This situation is being ameliorated through the new tariff policy, power sub-sector reorganisation and the newly liberalized petroleum market.

There is due reference to environmental concerns in the GOK Sessional Paper No. 2 of 1996 on Industrial Transformation to the Year 2020. However, it is also clearly evident that the focus is on the local/national environment (i.e. sensory pollution). Therefore, environment related

investments tend to deal with reducing SO_2 and TSP emissions by filtering techniques which do not affect CO_2 emissions. While there is reference to Agenda 21 in the Sessional Paper acknowledging the global environment, global issues clearly will not become a high priority due to lack of funds. Nonetheless, this project outlines an approach whereby Kenya can make effective use of global environment funds to build capacity and to demonstrate the national economic benefits achievable by addressing global climate issues.

The industrial transformation strategy of the GOK is shifting from regulatory intervention to promotion of market-driven private sector development. The strategy specifically aims at: i) building up the capabilities of enterprises to formulate and implement strategies and action programmes which will improve their competitiveness and productivity; ii) building up the capabilities of Government to formulate and manage an overall strategy for industrial development within the framework of an open economy; and iii) strengthening the capability of both public and private sector actors to manage development resources within the constraints of the country. This organisational strategy emphasises assisting the private sector to develop efficient and competitive manufacturing and service industries. The GOK specifically supports institutional strengthening of the Kenya Association of Manufacturers (KAM) to implement the strategy.

The project is specifically designed to complement the national policy presented in *Sessional Paper No. 2 of 1996 on Industrial Transformation to the Year 2020* which was adopted by Cabinet in November 1996. The major purpose of the Sessional Paper is to set out national policies and strategies that will lay the foundation for the structural transformation required to enable Kenya to join the league of *Newly Industrialised Nations* by the year 2020.

A.3 Prior and Ongoing Assistance

A number of multi-lateral and bi-lateral supported projects were undertaken in Kenya during the past 15 years with the aim of reducing energy use and reliance on oil imports. During the 1980s, the World Bank was interested in assisting to find alternatives to oil in large industry. At that time, major industrial enterprises were surveyed and sensitised to energy conservation opportunities. The GOK, through the Ministry of Energy, undertook an industrial energy conservation programme in 1987 with support from Canada. This three year programme provided training to professional technical staff in large industries in the use of auditing equipment and procedures. A UNIDO supported energy conservation programme, executed by Kenyan engineers at the Kenya Association of Manufacturers (KAM) with the assistance of technical advisors, developed capability at KAM to provide energy efficiency consulting services while conducting energy audits at 30 SME. This was further assisted by the World Bank project Kenya Energy Management Programme (KEMP) supported through ESMAP in 1997. During this assistance a total of 37 SME received energy audit services. In addition, one training workshop was organised for company executives in Nairobi. This project will be a natural extension of the KEMP activities.

The GOK industrial transformation strategy emphasises that the private sector must take the initiative to provide the investment in processing, manufacturing and service industries; to obtain appropriate technologies; and to develop efficient production that will bring about a competitive

and export oriented industrial sector. This is the basis upon which KAM undertook the Kenya Export Development Support (KEDS) project with US AID support.

In addition, the project will work closely with other ongoing projects in the field of environment and others in the pipeline like the Cleaner Production Centre and Industrial Pollution Monitoring.

A.4 Institutional Framework for Relevant Subsectors

The Ministry of Industrial Development (MoID) is the lead implementing agency for this project. The MoID is responsible for implementing the national strategy on Industrial Transformation to the Year 2020 upon which this project is designed. The MoID has designated the Kenya Association of Manufacturers (KAM) to implement the project on behalf of the Government. The Ministry of Energy (MoE) chairs the Energy Task Force coordinates all energy projects in the country. The Ministry of Agriculture (MoA) is involved in most of the SME sub-sectors either directly (e.g. sugar, tea, coffee) or indirectly through intermediary production (e.g. starch in the food processing industry). The Ministry of Environmental Conservation (MoEC) is active in national and global environmental projects. The Ministry of Natural Resources is responsible for forestry conservation and develops policy which impacts many SME that are using wood resources as raw material and fuel. The Ministry of Planning (MoP) plays a coordinating role to ensure consistency in national policy. All of these ministries have a role to play in the development of the SME sub-sectors to be addressed by this project and thus they are members of the Project Steering Committee (PSC). The MoID recognizes the need to facilitate dialogue between government and the private sector, and therefore places importance on enhancing the authority and capacities of business associations such as KAM to undertake private sector driven industrial transformation activities. A description of KAM activities and its mission are presented in Annex 15.

The National Development Plan for 1997-2001 recommends the establishment of a National Industrial Development Council (NIDC). The NIDC is proposed to be a Government and private sector body driven by private sector concerns. This project will provide a forum for interaction among the NIDC members.

B. Project Justification

B.1 Problem to be Addressed: the Present Situation

The project is designed to remove barriers to energy efficiency while increasing the institutional capability to implement energy efficiency projects. The project will specifically address the following barriers: i) lack of experience in identifying energy efficiency options; ii) lack of information regarding the economic viability of energy efficiency measures; iii) lack of ability to develop bankable projects; iv) lack of ability to secure financing for profitable projects; and v) lack of institutional capacity to mainstream energy efficiency within the SME and financial communities. In particular, the project is designed to facilitate the learning process required for widespread application of energy efficiency and energy conservation activities in Kenya. The barriers addressed are common in many other African countries and there is significant scope for replicability.

B.2 Expected End-of-Project Situation

The purpose of the project is to develop capacity: i) to identify appropriate energy efficiency and energy conservation measures; ii) to implement bankable projects; and iii) to pioneer, test and prove mechanisms for financing these projects. Sustainability will require that significant Kenyan private sector financial resources are invested. The accompanying donor support is intended to cover transaction costs during the period required for the SME and financial communities to become confident that investment in profitable energy efficiency measures makes good business sense.

The success of the project will be measured relative to several performance indicators, as follows.

1. Enhanced capacity at KAM to develop and promote energy efficiency projects: KAM will establish a permanent group of energy professionals that will be positioned to continue industrial energy efficiency activities beyond the project execution period. Two full-time professionals at KAM are already providing energy efficiency services to SME on a fee-for-service basis. The project will build on this experience and catalyze the process to effectively reach a much broader network.

2. Significant increase in energy efficiency investments within SME: It is anticipated that more than USD 4 million will be invested in financially attractive energy efficiency projects. Within the recently completed Kenya Energy Management Programme (KEMP), more than USD 2.5 million were invested by SME in cost-effective energy efficiency projects. During project preparation, it was estimated that USD 80 million could ultimately be invested in energy saving projects in the medium term (8-15 years). The project will provide capacity building and support the necessary human resources to attain this result.

3. Participation of local financial institutions: Local banks and other financial intermediaries will respond to the market demand by including energy efficiency loans in their lending portfolios. A number of financing mechanisms and sources of funding are already in place within programmes administered by local financial institutions (as indicated in the activities for output 4.1). The GEF supported project will develop bankable investment projects designed to access the available financing sources.

4. Viable energy service companies: The project will enable the emergence of ESCOs. As a non-profit industry association, KAM is not the obvious long-term location for a profit motivated private sector provider of professional energy efficiency services. It is assumed that, at the end of the project, private sector entrepreneurs will become established energy service companies. Discussions were held with three potential ESCOs during project preparation. These companies were particularly positive that this project would provide a framework within which they could develop their business strategies.

5. Enhanced capacity at KAM to provide services to members: The experience gained at KAM in implementing this project for its members will result in the development of additional member service initiatives.

B.3 Target Beneficiaries

The direct beneficiaries of this project are the small and medium scale industries in Kenya which will achieve production cost reductions through increased energy efficiency, thereby increasing profits. This will contribute to industrial development consistent with the national strategy toward Industrial Transformation to the Year 2020 being implemented by the Ministry of Industrial Development. The project will also strengthen the capacity of KAM to undertake further initiatives on behalf of its members which need not necessarily focus on energy. Cooperation with the Federation of Kenya Employers (FKE) during project execution will enable FKE to develop complementary programmes for its membership most of which are KAM members. The various capacity building and industrial awareness activities will also directly benefit the sub-sector associations (e.g. tea, hotels, sugar, textiles, and others) which will increase their capability to develop energy efficiency and production improvement programmes targeted at their particular members. A number of NGOs which are presently active on the National Energy Task Force (i.a. KENGO and CNA) will find increased opportunities to expand their energy saving activities. The increased energy awareness of SME will facilitate the work of Kenya Power and Lighting Company (KPLC) currently being conducted under the World Bank Energy Sector Reform and Power Development Project. The commercial banking sector will increase its capacity to handle energy related loans and benefit from increased financial activity related to energy efficiency projects.

B.4 Project Strategy and Institutional Arrangements

Project Strategy

The overall project strategy is to support participatory mechanisms among targeted stakeholders to foster increased awareness of the value of industrial energy efficiency and ensure that both national and local capacity is in place to manage the industrial energy efficiency transformation process. The project incorporates a significant number of specifically designed capacity building activities. The approach includes several modes of intervention including awareness raising, training of energy specialists and plant managers, policy analysis, development of financing mechanisms, and investment in viable energy efficiency projects.

A principal indicator of project success will be the enhanced readiness of SME to develop and ultimately invest in energy efficiency improvements. It is recognized that the decision to invest will not depend exclusively on economic considerations; but will also consider company culture and social aspects. Collaboration of the financial community is also essential for sustainability. In addition, Government policy initiatives will create a favorable working environment within which SME can develop their own enterprises as well as benefit the national economy. The project will solicit input from all stakeholders through out the project period and develop a forum for sustained dialogue.

Institutional Arrangements

UNOPS will execute the project. The UNDP Country Office will be responsible for the overall local supervision of the work and will follow the regular progress and maintain a record of the achievement of outputs.

UNOPS, as an Executing Agency for the project, will engage all internationally recruited personnel and will also undertake procurement of vehicles and equipment.

Due to its particular expertise in industrial energy efficiency and its prior work in Kenya, UNIDO will act as cooperating agency to contribute to the capacity building activities under Components 1 and 3 of the project. UNIDO will also assist with identification of equipment requirements and identification of training programmes.

The project will be nationally implemented through the Ministry of Industrial Development by the Kenya Association of Manufacturers (KAM). GEF supported project staff at KAM will include a full-time national project director (NPD), a full-time senior engineer and a full-time junior engineer. Part-time professional staff with engineering, economics, finance and training expertise will also be recruited. Internationally recruited experts will provide technical assistance to KAM throughout the project execution period. This will include a Chief Technical Advisor (CTA) who will support the PMU throughout the 5 year project period. The CTA will be a direct counterpart of the NPD and will report to the NPD. The CTA may be stationed in Nairobi during the first year of the project and provide part-time backstopping during the next four years. In addition, nationally and internationally recruited experts will provide short-term consultant services as needed. Terms of reference for the project personnel are in Annex 2. The internationally recruited experts must have proven capability in the development and implementation of bankable energy efficiency projects. They will be results-oriented and impart their experience to their Kenyan counterparts.

A Project Steering Committee (PSC) will be established with representatives from all the relevant national stakeholders -- and including UNDP and UNIDO. Other interested donors (e.g. the World Bank) will be invited to participate in the PSC. In addition, the PSC will include representation by the Ministries of Industrial Development, Energy, Environmental Conservation, Agriculture, Finance, and Planning, as well as industry representatives. Inter-ministerial, private sector industrial and commercial enterprises, and other stakeholder coordination will be achieved through the Project Steering Committee (PSC). The representation of several of the most relevant ministries will ensure consistency with national policies and increase the likelihood of sustainability. A complete list of identified stakeholders is in Annex 1. Terms of reference for the PSC are in Annex 3. It is anticipated that key institutions such as the Federation of Kenya Employers (FKE) will be actively involved in project implementation; and so it is likely that one of the PMU staff members will be recruited through the FKE.

Professional energy efficiency services are currently provided to SME through the energy management unit established at KAM within the Kenya Energy Management Programme (KEMP). The PMU will be an extension of this unit at the initial stages of the project. However, KAM is a non-profit organization and thus as the PMU develops its commercially oriented nature during the project period, it is anticipated that the PMU will relocate. It is planned that the PMU will become an independent not-for-profit organization in the latter years of the project. This will allow the PMU to undertake energy service contracts on a profit basis as well as continue to work on socially oriented grant funded activities at no profit. The PMU will continue to provide services to KAM members and KAM would maintain a position on the board of directors.

The PMU will work directly with SME and also with SME associations, who will be fully informed and assist the PMU to achieve the desired benefits for association members. KAM will take the co-ordinating role for enterprise audits and realisation of the seminars and workshops. The actions and activities of KAM will affect not only those SME directly involved in the project but also industrial sectors of Kenya as a whole by sharing the experience of successfully implementing bankable energy projects.

B.5 Reasons for Assistance from UNDP/GEF

Kenya is a signatory to the UN Framework Convention on Climate Change. Signed in June 1992 and ratified on 30th August 1994, the Convention entered into force for Kenya on 28th November 1994. The project activities respond to the GEF Operational Strategy for Removal of Barriers to Energy Conservation and Energy Efficiency under Operational Programme number 5.

The project will build on past experiences, provide new incentives, and finance activities to develop human and institutional capabilities to promote private sector participation and introduce energy efficient technologies. GEF support is needed to increase confidence among SME that investing in energy efficiency is often the best economic choice and good business practice. The project will serve to catalyse this process.

In the past, KAM has received modest support from donors which has resulted in two full-time professionals working in KAM to provide energy audit services on a fee-for-service basis. The present project will enable KAM to go beyond this meagre provision of services to the next level of encouraging active investments in improved energy efficiency within Kenyan SME.

B.6 Special Considerations

Kenya's liberalization policy has resulted in significant energy cost increases and subjected Kenya produced goods to increasingly tough competition. This project will contribute towards reducing the cost of energy in SME enabling Kenya to become more competitve. The reduced energy expenditure in the industrial sub-sectors will save foreign exchange and make it available for programme development in other sectors such as health and education.

B.7 Coordination Arrangements

In anticipation of the World Bank Energy Sector Reform and Power Development Project, Kenya has undertaken measures to improve its energy efficiency. On the supply side, Kenya Power & Lighting Company (KPLC) has recently carried out a loss reduction study to identify cost effective means to reduce distribution losses in the major load centres. On the demand side, the Kenya Energy Management Programme (KEMP), administered by KAM, is focusing on the provision of information and energy audit services on a cost recovery basis. Through its involvement in this World Bank loan project, KAM will ensure complementarity.

KAM has been an effective representative of Kenyan industry for almost 40 years. Its membership of 600 enterprises comprises 70% of Kenya's formal sector industrial enterprises. The Association is well placed to provide an essential link for co-operation and communication between Government and the manufacturing and service sectors; and it is in a position to effectively approach its members and non-members.

KAM will coordinate the activities within this project with those of the project on "Ecologically Sustainable Industrial Development (ESID) for the Jua Kali Enterprises in Kenya". The ESID project is being executed by the Federation of Kenya Employers (FKE) with UNIDO support, and it targets small-scale informal sector enterprises (Jua Kali). While KAM membership does not include Jua Kali, these enterprises are potential future members. It will benefit both projects that KAM and FKE exchange information. A summary of the ESID project is in Annex 14.

B.8 Counterpart Support Capacity

The Government of Kenya has expressed commitment to energy efficiency activities designed to improve industrial output. The Sessional Paper on Industrial Transformation to the Year 2020 clearly indicates the GOK intention to strengthen capacity at KAM to assist in this process. The project is designed to engender participation of government ministries and industry stakeholders. The project will build and strengthen existing institutions. Capacity building is the guiding principle for all project activities. A maximum number of Kenyan professionals will be engaged by the project and they will be supported by one long-term and several short-term international consultants.

C. Development Objective

The provision of adequate energy for the growth of Kenya's industrial sector is the broad development goal of this project. At present, there is a serious shortfall in electrical power generation. This project will contribute towards bringing the peak electrical demand in line with generation capacity. It will assist small and medium enterprises to reduce production costs through increased energy efficiency, thereby increasing profits, increasing employment and alleviating poverty.

The project is designed to remove barriers to energy efficiency while increasing the institutional capability to implement energy efficiency projects. The project will specifically address the following objectives: i) to increase experience in identifying energy efficiency options; ii) to enhance information regarding the economic viability of energy efficiency measures; iii) to improve ability to develop bankable projects; iv) to increase access to financing for profitable projects; and v) to enhance institutional capacity to mainstream energy efficiency within the SME and financial communities. In particular, the project will facilitate the learning process required for widespread application of energy efficiency and energy conservation activities in Kenya.

D. Immediate Objectives, Outputs, and Activities

Component 1: Capacity Building and Awareness in Industry

Immediate Objective 1

Increase awareness among business owners and operators of the economic advantage to be gained through implementation of energy efficiency measures.

Output 1.1

Business owners and operators learn of successful energy efficiency projects which can be replicated with economic benefits in their enterprises. They will gain a measurable increased level of awareness and increased capability to assess energy efficiency opportunities.

Activities for Output 1.1

A series of assessments will be conducted for the purpose of targeting awareness raising activities and also for designing the capacity building activities under Output 2.1.

An assessment of the industrial structure and elaboration of a list of SME to be addressed by the project will be made, including indications of interest and readiness of related SME to receive professional advice in energy conservation and to carry out related measures/investments on a self-financed basis.

An assessment of the potential for energy saving within SME will be conducted and reported. This assessment will indicate the most important technology mitigation measures and direct the scope of the training programme to be developed by the Project Management Unit (PMU).

An assessment will determine specific training needed to enhance the capability of local counterparts who act as local focal points for the implementation of the project, for distribution of related information and for training of local technicians/managers in energy conservation issues. This activity will lay the foundation for establishment of a national network of energy auditors.

The indicated assessments will be updated annually and the training programmes and project strategy will be adjusted accordingly.

Orientation seminars will be arranged for leading personnel of participating enterprises to present energy efficiency and energy conservation opportunities in Kenya's manufacturing and commercial centres. These seminars will serve to introduce various energy saving technologies and equipment as well as indicate how these can be used to the advantage of the enterprises. In particular, the seminars will serve to motivate the principal decision makers to undertake activities that improve energy efficiency. The underlying assumption directing these seminars is that many win-win energy efficiency projects are unexploited due to informational, social and organizational factors. The seminars will highlight the differences between supply-side and demand-side energy management; and develop methodologies by which decision makers can make appropriate demand-side energy choices. An important output of these seminars will be that SME decision makers develop demand-side energy efficiency strategies that will direct the formulation of the training courses under the activities for output 2.1. Annex 4 contains details of the content for an appropriate course to raise awareness among SME decision makers.

KAM will establish the criteria for an annual Energy Efficiency and Conservation Award in recognition of energy efficiency achievements by its members. This award will recognize compliance with ISO 14000.

Immediate Objective 2

Build capacity within the industrial and service sectors to respond in a way to obtain both local and global benefits from enhanced energy efficiency.

Output 2.1

Outcomes of this component will include: improved capacity in the identification, evaluation and preparation of energy conservation related measures; improved SME staff capacity in industrial effluent management; and increased awareness of the financial opportunities available through investment in energy efficiency. SME professionals will be trained in a series of seminars and workshops in practical methods and techniques for the preparation and execution of energy saving measures.

Activities for Output 2.1

A series of specialised training courses and workshops will be arranged at various manufacturing and commercial centres in Kenya, i.e. Nairobi, Mombasa, Thika, Kisumu, Kericho, Eldoret, Nakuru and possibly other centres. These courses will teach the fundamentals which are most necessary for the diligent application of the indicated energy saving measures. Technical courses will be offered for plant operators and energy auditors which target the principal sources of energy loss. These will address boilers and steam systems, electrical and controls, compressors, and maintenance. Specific courses will be offered dealing with energy management and operation of ventilation systems. courses will be developed to address specific sub-sectors (e.g. hotels) and also specific technological areas (e.g. steam). Details of proposed training programs and course outlines are in Annex 4.

During the training courses, the implementation of the identified measures will be stressed so as to reduce the level of uncertainty and apprehension which prevents adoption of these measures today. In addition, the trainees will be expected to carry out case studies to strengthen their understanding of the undertying principles. Some of the trainees will develop capacity to serve as local resource persons in subsequent courses.

An SME energy efficiency network (EEN) will be established and information will be disseminated through the network, encouraging open discussion of best practice. The main objective of the EEN is to facilitate and encourage the decision-making processes with regard to energy efficiency in industry. The market analysis of the different industrial sectors will have defined the needs and obstacles with respect to energy efficiency in industry. A contact group will be established in each selected industrial sector to assist and advise on relevant topics regarding energy efficiency and energy bench-marking. The EEN will be supported by industry members and by government departments. The data collected will be useful to the government in maintaining it energy databases and in formulating policy. Due to the relevance of the EEN in the government/industry dialogue, a representative from the MoID will undertake a study tour to Norway to gain first-hand knowledge of the value of the network in national energy policy. Guidelines for EEN development are in Annex 5.

Component 2: Overcoming Financial Barriers

Immediate Objective 3

Develop business plans for environmental and energy efficiency actions and indicate cost recovery mechanisms for energy efficiency measures.

Output 3.1

A Guide for Kenyan and Foreign Investors Participating in the Implementation of Energy Efficiency and Energy Conservation Projects will be produced.

Activities for Output 3.1

The project will enable removal of the financing barriers by the preparation of a *Guide for Kenyan and Foreign Investors Participating in the Implementation of Energy Efficiency and Energy Conservation Projects*. The Guide will be a significant output of the project and will serve as a useful tool in subsequent implementation of energy efficiency investments. The indicative contents of the proposed Guide include the following: i) the legal basis for energy conservation investments in Kenya, including a list of the existing legislation and measures to improve the legislative basis for increased investment activity; ii) a description of the tax system, excise payments and applicable customs duties; iii) information regarding the financing of energy efficiency projects and the repayment of investments (Topics would include: sources of finance and guarantees; and financial mechanisms such as Third Party Financing and Energy Service Companies (ESCOs)); iv) the requirements of financial institutions on preparing and submitting proposals for energy efficiency project financing; and v) procedures for development and implementation of energy saving projects in Kenya (including the project design process, the role of Kenyan agencies in project implementation, and mechanisms for cooperation with foreign partners). This Guide would be prepared during the first year of the project. A Summary of the Guide will be prepared for decision makers (i.a. financial institutions, local and national authorities, utilities, and donor and multilateral lending agencies) which are often unfamiliar with the merits of energy efficiency investments. As the planned demonstration projects are implemented (under Component 3); the results would be presented in the form of Proof of Concept projects and annexed to the Guide. The Guide would be updated, as appropriate, and serve to ensure sustainability. The PMU would be responsible to maintain the Guide. The terms of reference for the local and international consultants will include this activity.

Output 3.2

Financial engineering courses will be delivered to produce bankable investment projects which are acceptable to financial institutions. The project will assist SME to secure financing for their energy efficiency investment projects.

Activities for Output 3.2

A financial engineering course will be developed and delivered by the PMU to prepare the SME to collaborate in the projects identified in the energy audits. This course will take the participants through the process from energy audit to investment plan development to bankable proposal preparation. The course will provide a structure within which the training in financial analysis will be delivered. Candidates for this training programme will arrive with projects identified

during the energy audit phase and which are likely to be implemented as demonstration projects. The candidates will be selected on a competitive basis in accordance with criteria to be developed at the PMU and agreed by the Project Steering Committee. Suggested criteria are presented in the demonstration project component. These include: energy saving potential based on energy audits; participation in the financial engineering courses; short payback period; and type of energy efficiency measures. GEF support will provide financial and technical assistance for the development of model investment plans and the preparation of bankable proposals, which constitute principal outputs of the financial engineering course. This investment plan development assistance will be provided to the selected enterprises on a cost-sharing basis to encourage only those enterprises that have a serious intent in following up their business development with concrete action. The financial engineering course will be offered once per year during years 1, 2, 3, and 4 of the project.

Immediate Objective 4

Assist enterprises to identify opportunities for leveraging additional financing for their projects through commercial financing sources and international assistance programmes and assess the risks associated with energy efficiency projects.

Output 4.1

An enabling environment will be established to allow the emergence of ESCOs which will provide expert engineering and financial services on a shared energy saving basis.

Due to the market orientation of the project, SME will become more financially self-reliant and will become more proactive in seeking technical and financial assistance to overcome market barriers.

Activities for Output 4.1

Energy Service Companies (ESCOs) can play an important role in reducing the energy use of SME and the project will create a framework through which viable and entrepreneurial ESCOs can emerge. Certain models are being explored and have received favourable response from the stakeholders during project preparation -- particularly, financial institutions and management consulting/auditing firms which recognise new business opportunities arising from investment in energy efficiency measures. A form of the traditional performance-based shared savings contract is favoured. The GEF project will provide support to enable ESCO establishment. The project budget includes an amount to cover consulting and training services by internationally recognized ESCOs to assist qualified Kenyan firms to develop their capacity to act as local ESCOs. The indicative contents of an ESCO business plan are in Annex 6.

The financial sector is well established in Kenya. It comprises more than 100 financial institutions; and many of them administer a number of special loan programmes which are dedicated to the development of SME. The European Investment Bank has provided a line of credit through a Global Private Enterprise Loan Programme. Loans are available through several Kenyan financial institutions for the type of energy efficiency projects that are envisaged. The EIB programme offers Kenya Shilling loans at slightly below market rates and US Dollar loans at internationally competitive market rates for export oriented enterprises. In addition, several banks

are considering involvement in the IFC/GEF SME Programme (see Annex 11) which can offer concessionary financing for the types of energy saving investments envisaged within this project. The PMU will work with local financial intermediaries and management consulting firms, which have experience with these specialized financial programmes, to develop appropriate financing packages for SME investment in energy saving projects.

The PMU will collaborate with the KPLC Efficiency Improvement Unit in the identification of possible energy efficiency investment projects. Specifically, KAM's experience with SME within the KEMP and KEDS projects has provided in-depth understanding of the operation and energy problems faced by SME which have not until now been addressed by KPLC, which typically focuses on large scale enterprises. In addition, activities within this GEF supported project would complement those planned within the WB Energy Sector loan project.

The World Bank is presently undertaking a study on the use of non-grant financing mechanisms that can be applied to WB GEF projects. Many of these are based on IFC experience with non-grant mechanisms in a GEF context. The project will make use of this knowledge to design workable financing packages for the demonstration projects, where possible.

Component 3: Demonstration Projects

Immediate Objective 5

The overall objective of this activity is to promote the sustainability of the energy efficiency management programme undertaken within this GEF supported project by providing demonstrable results which can be widely replicated throughout Kenya. Specifically, this activity will seek: i) to apply the knowledge and awareness gained in the previous activities and to implement viable energy efficiency projects; ii) to secure financing for energy efficiency projects; and iii) to illustrate to the SME and financial communities that environmentally sound investments in energy saving measures can be cost-effective and profitable.

Output 5.1

Demonstration projects will be implemented to test and prove the new financial mechanisms developed under Component 2. Significant energy savings and CO_2 emission reductions will be attained as a result of the demonstration projects.

Measurement of the energy savings and environmental impacts of the demonstration projects will be undertaken by the PMU, who will adapt the International Performance Monitoring and Verification Protocol (IPMVP) methods for use in Kenya. This will provide a database of successful projects as well as feed back lessons learned from the demonstrations for widespread dissemination through the SME network.

A proposal will be developed for consideration of support by the International Finance Corporation.

Activities for Output 5.1

KAM experience with a limited number of energy saving projects during the past ten years indicates that most SME can benefit from short payback period energy efficiency improvement investments. The proposed GEF supported project will build on the success of this limited number of cases and demonstrate widely the application of cost-effective energy efficiency measures. While this process is already underway as a result of current KAM activities, it will be expanded and accelerated through the SME capacity building activities (Component 1) and the introduction of viable financing mechanisms (Component 2).

The project is market oriented and a principal focus will be increased understanding of the simplicity with which energy efficiency measures can be implemented as well as increased knowledge regarding how to implement energy efficiency measures. Sustainability will be ensured through demonstration of successful projects. It will be a strategic focus of the project to highlight "success factors" as opposed to the more mundane "lessons learned".

The demonstration projects will be selected within the SME sub-sectors which exhibit significant potential impact in terms of energy efficiency improvements and CO_2 emission reductions. Demonstration project selection will be made by the Project Steering Committee which will ensure sustainability by selecting a representative sample of enterprises which exhibit commitment and good prospects for success. Criteria for selection of demonstration projects will be developed with active involvement of leaders in the business community to ensure SME participation. Development of the selection criteria will include consideration of: SME willingness to participate in the project design on a cost-sharing basis; energy saving potential based on energy audits; participation in the financial engineering courses; potential for replicability; short payback period; regional diversity; and type of energy efficiency measures.

The results of an analysis of the energy saving potential is given in Annex 7. These results will be used to guide the selection of demonstration projects.

The project will provide technical asssistance to cover learning curve costs associated with initiating investments in energy efficiency measures in Kenya. However, sustainability of the efforts, and continued benefits to industry, will require a significant amount of affordable investment capital in the years following the project. Therefore, the project activities will strive toward attaining a certain SME investor maturity to enable a viable proposal to be prepared for consideration of IFC support following this project. This UNDP supported project is focused on building capacity within the SME community to understand the process of developing energy efficiency projects, to assist them to prepare bankable investment projects, and to introduce them to the investment process through demonstration projects. An eventual IFC supported project would build on the lessons learned and place greater emphasis on the investment end of the process.

The training activities under Component 4 would involve dialogue and possible secondment to successful and relevant projects in other countries. For example, lessons learned in the IFC Hungary Energy Efficiency Co-Financing Program would be particularly relevant for further defining project activities in Kenya. Benefits from an eventual IFC project would include: (i) implementation of cost-effective energy efficiency projects; (ii) direct energy cost savings for

energy users; (iii) expansion of national financial institutions in the energy efficiency financing market; (iv) mobilization of domestic and international capital for energy efficiency projects; (v) documentation of the financial structure and environmental benefits of successful energy efficiency investments; and (vi) promotion of a sustainable, commercially viable energy efficiency financing market which can evolve to fully non-concessional finance methods. The current UNDP supported project will not fully attain these benefits; however, the project will achieve greater success by aiming at the next phase.

Component 4: Institutional Strengthening and Sustainability

Immediate Objective 6

The overall objectives of the institutional strengthening activity are: i) to enhance the capability of the members of the Project Management Unit (PMU) to effectively execute the project; ii) to provide the PMU with capacity to identify the needs of SME so as to encourage them to address energy efficiency and environmental issues; and iii) to develop capacity to coordinate the efforts of stakeholders involved in energy efficiency initiatives.

Output 6.1

The PMU will develop skills to facilitate the introduction and adoption of energy efficiency measures within SME. KAM staff have worked on analogous projects and have a basic understanding of the economic, social and political constraints which inhibit investment in energy efficiency projects. After receiving the appropriate training, they will be able to use their enhanced experience to more effectively identify potential investment projects, to understand and respond to the needs of the SME, and to promote stakeholder involvement.

The PMU located at KAM will become a centre of energy efficiency excellence which: i) has expertise and knowledge of energy technology and financing options; ii) maintains a database of industrial energy use and energy efficiency activities; iii) produces educational, promotional and awareness materials; iv) has training facilities; v) assists Government in the formulation of energy and environment policy; and vi) provides information useful to Government in its reports to the UN FCCC.

Activities for Output 6.1

The underlying principle of this project component is to develop capacity within Kenya to continue energy efficiency activities on a fee-for-service basis beyond the project period. The targeted output of the Chief Technical Advisor will be to ensure development of the required national capability.

Institutional strengthening of the PMU will involve technical, economic, financial and managerial training. This training will be undertaken in parallel with the previously described project activities. The technical staff will participate in various specialised training courses on energy management and environmental conservation targeted to small and medium sized enterprises. Specialised technical courses on international best practice in energy efficiency will be attended at qualified institutions within Kenya, the African region and internationally.

This training will be obtained through a combination of short-term and medium-term intensive courses; study tours; participation in and contributions to international conferences; and short-term and medium-term secondments. Full-time international technical assistance will support the PMU in the early stages and provide back-stopping throughout the project. The training will strengthen the capability of the PMU to effectively manage the activities under Components 1, 2 and 3 of the project.

The PMU will undertake to prepare a framework within which to identify and assess the most promising energy efficiency options. Within this activity, they will: 1) prepare an energy use database of the major industrial sub-sectors; 2) determine the energy reduction potential related to specific replicable energy efficiency measures; 3) determine the profitability of the most attractive measures based on cost savings; 4) determine the profitability of the most attractive measures based on GHG emission reductions; and 5) create a methodology for establishing incremental costs and encouraging enterprises to select measures related to GHG emission reductions. Having established a viable framework, the PMU will suggest approaches whereby the database of information can be used to identify financing mechanisms for the implementation of profitable demonstration projects.

With a focus on developing bankable energy efficiency projects, the PMU will assemble information on the current status of energy policy, energy supply, energy pricing, status of environment awareness and global climate with respect to energy consumption, as well as the status of implementation of national policies and strategies for reduction of energy utilisation and related environmental impacts. A paper will be prepared detailing the reforms in energy and environment policy required, including incentives needed to ensure satisfactory and sustainable implementation of energy efficiency projects.

E. Inputs

E.1 UNDP Country Office Contribution

The UNDP/TRAC contribution will be USD 500,000 for support of the PMU and SME capacity building activities. This contribution will provide national consultant services and the sub-contracting national firms and institutions as required input to the activities undertaken by the PMU.

The UNDP contribution will be allocated as follows:

Outputs/Activities	**UNDP/TRAC Input (USD)**
Component 1: Capacity Building and Awareness	30,000
Component 2: Overcoming Financial Barriers	80,000
Project Management Unit	285,000
Official Duty Travel	30,000
Contingency	75,000
Project Brief Preparation	40,000
Total	540,000

E.2 GEF Contribution

The GEF financial contibution to the project is USD 3,193,000. This amount will cover the costs of SME training and network establishment; financial engineering and business plan devlopment; assistance to implement viable demonstration projects; training of the PMU staff and other relevant stakeholders; and support to the operation of the PMU.

Details of the allocation of the GEF inputs are given in the following table.

E.3 Kenya Contribution (in kind)

The GOK will provide qualified representatives to participate in the Project Steering Committee. In addition, the relevant Ministries will assign appropriate persons to interact with the PMU and other project staff as required for the successful execution of the project. Representatives of the Mininstries of Industrial Development, Energy, Environmental Conservation, and Agriculture will be invited take part in the workshops. Other relevant organisations that have a stake in the project will also be encouraged to participate in the project.

The Kenya Association of Manufacturers will make available office space for the PMU. KAM will also provide parking, electricity, water, janitorial services and security for the PMU staff and offices. KAM will also make office space available for visiting consultants. In addition, the KAM board will set up a special committee to oversee the smooth running of the project. This is estimated to cost an equivalent of USD 5, 000 per month.

Table of Inputs (GEF)

Outputs/Activities	**Inputs (GEF)**						
	International Experts (p/m)			National Experts (p/m)			Total costs (USD)
	Chief Techical Advisor	Int'l Consultants	UNIDO	National Project Director	PMU Professionals (2 full + 2 half)	National Consultants	
Component 1: Capacity building & awareness							
Specialised training	1	3	8	5	24	6	100,000
Auditing workshops	1	3	8	5	24	6	100,000
Equipment			1				100,000
Network	3	4		4	24	6	100,000
Component 2: Overcoming financial barriers							
Guide for investors	4	6		6	24	24	200,000
Financial eng'g courses	6	6		8	36	16	410,000
ESCO development	3	6		8	36	12	210,000
Component 3: Demonstration projects							
Investments							
Measurement, verification	6	8	6	12	36	10	750,000
Component 4: Institutional Strengthening							
Training (PMU & Others)	1		1	2	18	10	300,000
Project Management	2			10	18		461,000
Vehicles							130,000
Support costs (UNOPS)							180,000
Support costs (UNDP)							52,000
Monitoring, evaluation							100,000
Total	**27**	**36**	**24**	**60**	**240**	**90**	**3,193,000**

F. Risks

A significant risk associated with this project is the growing crisis of governance in Kenya. However, it is important to note that recently a general election took place and a new parliament has been successfully convened. In addition, economic restructuring with assistance of the IMF is underway; and the outcome may affect the project. It is clear that this GEF supported project will intervene at a critical point in Kenya's industrial transformation process; and it has been specifically designed for active participation of the private sector to ensure sustainability. The project will build on the success and lessons learned of related donor and GOK supported activities during the past ten years. It is consistent with the national government policy aims indicated in Sessional Paper No. 2 of 1996 on Industrial Transformation to the Year 2020 -- which has already set out the framework for industrial development. The project will respond to the policy aims by assisting private enterprises to develop in a new market-oriented environment.

The Kenya Association of Manufacturers is a highly credible business association in Kenya and has been strategically selected by the the Ministry of Industrial Development to execute the project. Within its capacity as PMU, KAM will be well placed to directly impact the viability and business sustainability of its membership. This will be achieved through development of expertise and the establishment of project development capacity within the energy professionals community. Sustainability of the project beyond this GEF supported phase is expected because the project will provide commercial services for which, after successful demonstration, there will be a continuing demand. In particular, a network of energy auditors will be trained and energy professionals will become skilled in implementing profitable energy efficiency measures. The energy service expertise created with project support will enable greater market penetration beyond the initial demonstration projects because this expertise will increasingly be provided on a fee-for-service basis as the economic benefits become apparent to the SME owners and operators. The national economic situation may influence the emergence of viable ESCOs. Nonetheless, while ESCO establishment is a desirable outcome of the project, they are not necessary to achieve the anticipated energy efficiency savings.

In order to minimize risk, the project has incorporated the following measures. UNOPS will act as the Executing Agency; and UNIDO will act as Cooperating Agency. Their experience with both UNDP and GEF projects will contibute to successful execution. The UNDP Country Office will monitor project progress on a monthly basis, i.a. through its participation in the National Energy Task Force. In addition, the Ministry of Industrial Development will be the lead GOK Implementing Agency. This Ministry is the author of the national strategy on Industrial Transformation to the Year 2020. The project is designed in line with this strategy and the Ministry has a vested interest in successful execution.

G. Prior Obligations and Prerequisites

G.1 Prior Obligations

It is a prior obligation that the comments received from the GEF Council members dated 23 July 1998 are adequately addressed in the project document. The final project document will be submitted for CEO endorsement to ensure that the project achieves its ultimate objectives. The

project document will be signed by UNDP and GEF assistance to the project will be provided only if the prior obligations stipulated above have been met to UNDP's satisfaction.

G.2 Prerequisites

Active stakeholder participation is essential to ensure that the anticipated benefits are attained. Therefore, it is a prerequisite of the UNDP support that all identified Project Steering Committee members issue a "letter of no objection" to be appended to the Project Document.

The selection of the national core staff and the internationally recruited chief technical advisor should be completed at the time of initiation of project activities.

The project document will be signed by UNDP, and GEF assistance to the project will be provided, subject to UNDP receiving satisfaction that the prerequisites listed above have been fulfilled or are likely to be fulfilled. When anticipated fulfillment of one or more prerequisites fails to materialize, UNDP may, at its discretion, either suspend or terminate the project.

The UNDP Headquarters Office in New York will enter into agency agreements with UNOPS, UNDP Nairobi Office and UNIDO on normal agency basis. UNOPS will enter into an agreement with KAM on a Reimbursable Loan Agreement (RLA) basis for disbursement of funds to cover direct costs. The salaries of local consultants will be paid by UNDP Nairobi Office.

H. Project Reviews, Reporting, and Evaluation

The project will submit to tripartite review (joint review by representatives of the Government, the UNDP and UNOPS) at least once every 6 months during the first 2 years, and at least once every 12 months thereafter. The first such meeting will be held within the first 6 months of the start of full implementation. The NPD shall prepare and submit to each tripartite review meeting a Project Performance Evaluation Report (PPER). Additional PPERs may be requested, if necessary, during the project.

A project terminal report will be prepared for consideration at the terminal tripartite review meeting. It shall be prepared in draft sufficiently in advance to allow review at least four months prior to the terminal tripartite review.

The Project Steering Committee will meet every six months at which the National Project Director will report the project status. Reports will be prepared and circulated in advance to allow review and assessment prior to the meeting.

Quarterly progress reports will be prepared by the National Project Director and submitted to the UNDP Country Office.

There is a national "Energy Task Force" which reviews all GEF energy sector projects. The project coordinator will continue to provide monthly updates to this panel for review during the monthly task force meetings. There is an external GEF evaluation committee that will also provide necessary additional evaluation and dissemination services to this project.

I. Legal Context

This project document shall be the instrument referred to as such in Article 1 of the Standard Basic Assistance Agreement between the Government of Kenya and the United Nations Development Programme, signed by the parties on 17 January 1991. The host country implementing agency shall, for the purpose of Standard Basic Assistance Agreement, refer to the government cooperating agency described in that Agreement.

The following types of revisions may be made to this project document with the signature of the UNDP Resident Representative only, provided he or she is assured that the other signatories of the project document have no objections to the proposed changes:

a) Revisions in, or addition of, any of the annexes of the project document;

b) Revisions which do not involve significant changes in the immediate objectives, outputs or activities of the project, but are caused by the rearrangement of inputs already agreed to or by cost increases due to inflation; and

c) Mandatory annual revisions which rephase the delivery of agreed project inputs, or increased expert or other costs due to inflation or take into account agency expenditure flexibility.

J. BUDGET

KEN98G31/A/1G/31

Code	Description	Total		1999		2000		2001		2002		2003		2004	
		$	p/m	$	p/m	$	p/m	$	p/m	$	p/m	$	p/m	$	p/m
10.00	**Project Personnel**														
11.01	Chief Technical Advisor	405,000	27	45,000	3	135,000	9	90,000	6	45,000	3	45,000	3	45,000	3
11.51	Environment Specialist	84,000	6	14,000	1	14,000	1	14,000	1	14,000	1	14,000	1	14,000	1
11.52	Finance Specialist	168,000	12	28,000	2	28,000	2	28,000	2	28,000	2	28,000	2	28,000	2
11.97	Consultants (International)	252,000	18	42,000	3	42,000	3	42,000	3	42,000	3	42,000	3	42,000	3
11.99	Sub Total	909,000	63	129,000	9	219,000	15	174,000	12	129,000	9	129,000	9	129,000	9
	909,000														
13.01	Adm. Support Staff	54,000	60	3,600	4	10,800	12	10,800	12	10,800	12	10,800	12	7,200	8
13.02	Driver	36,000	60	2,400	4	7,200	12	7,200	12	7,200	12	7,200	12	4,800	8
13.99	Sub Total	90,000	120	6,000	8	18,000	24	18,000	24	18,000	24	18,000	24	12,000	16
15.00	**In- Country Travel**														
15.01	Official Duty Travel	27,000		3,500		5,000		5,000		5,000		5,000		3,500	
15.99	Sub Total	27,000	180	3,500	12	5,000	36	5,000	36	5,000	36	5,000	36	3,500	24
	27,000														
16.00	**Mission Costs**														
16.01	Mission Costs	100,000		10,000		20,000		20,000		20,000		20,000		10,000	
16.02	Monitoring & Evaluation	100,000				20,000		20,000		20,000		20,000		20,000	
16.99	Sub Total	200,000		10,000		40,000		40,000		40,000		40,000		30,000	
	200,000														
17.00	**National Professionals**	0													
17.01	National Project Director	192,000	60	12,800	4	38,400	12	38,400	12	38,400	12	38,400	12	25,600	8
17.02	Senior Engineer	132,000	60	8,800	4	26,400	12	26,400	12	26,400	12	26,400	12	17,600	8
17.03	Senior Engineer (Mechanical)	45,000	30	3,000	2	9,000	6	9,000	6	9,000	6	9,000	6	6,000	4
17.04	Senior Engineer (Chemical)	45,000	30	3,000	2	9,000	6	9,000	6	9,000	6	9,000	6	6,000	4
17.05	Junior Engineer	102,000	60	6,800	4	20,400	12	20,400	12	20,400	12	20,400	12	13,600	8
17.06	Economist	66,000	30	4,400	2	13,200	6	13,200	6	13,200	6	13,200	6	8,800	4
17.07	Finance Specialist	66,000	30	4,400	2	13,200	6	13,200	6	13,200	6	13,200	6	8,800	4
17.51	Consultants (National)	66,000	30	4,400	2	13,200	6	13,200	6	13,200	6	13,200	6	8,800	4
17.99	Sub Total	714,000	330	47,600	22	142,800	66	142,800	66	142,800	66	142,800	66	95,200	44
19.00	**COMPONENT TOTAL**	**1,940,000**		**196,100**		**424,800**		**379,800**		**334,800**		**334,800**		**269,700**	
	1,940,000														
20.00	**Contracts**														

21.00	Local Companies, including financial institutions, legal experts, management and auditing firms	58,000				12,000		12,000		12,000		12,000		10,000	
21.99	Sub Total	58,000				12,000		12,000		12,000		12,000		10,000	
	58,000														
23.00	UNIDO	345,000		40,000		100,000		100,000		80,000		25,000			
23.99	Sub Total	345,000		40,000		100,000		100,000		80,000		25,000			
	345,000														
29.00	**Component Total**	**403,000**		**40,000**		**112,000**		**112,000**		**92,000**		**37,000**		**10,000**	
	403,000														
30.00	**Training**														
31.01	Short courses	80,000				20,000		20,000		20,000		20,000			
31.02	Secondments	50,000				10,000		10,000		10,000		10,000		10,000	
31.99	Sub Total	130,000				30,000		30,000		30,000		30,000		10,000	
	130,000														
32.01	Study tours	60,000		12,500		12,500		12,500		12,500				10,000	
32.02	Workshops	70,000		5,000		14,000		14,000		14,000		14,000		9,000	
33.01	Conferences	40,000				8,000		8,000		8,000		8,000		8,000	
33.99	Sub Total	170,000		17,500		34,500		34,500		34,500		22,000		27,000	
	170,000														
39.00	**COMPONENT TOTAL**	**300,000**		**17,500**		**64,500**		**64,500**		**64,500**		**52,000**		**37,000**	
	300,000														
40.00	**Equipment**														
43.00	Premises	25,000		2,500		5,000		5,000		5,000		5,000		2,500	
43.99	Sub Total	25,000		2,500		5,000		5,000		5,000		5,000		2,500	
	25,000														
47.00	**International Procurement**														
47.01	Equipment	118,000		48,000		53,000				17,000					
47.02	Vehicles	70,000		70,000											
47.03	Vehicle operation/Maintenance	70,000		10,000		13,000		13,000		13,000		13,000		8,000	
47.99	Sub Total	258,000		128,000		66,000		13,000		30,000		13,000		8,000	
	258,000														
49.00	**COMPONENT TOTAL**	**283,000**		**130,500**		**71,000**		**18,000**		**35,000**		**18,000**		**10,500**	
	283,000														
50.00	**Miscellaneous**														
51.00	Sundries incl. Office supplies	23,418		2,000		4,500		4,500		4,500		4,500		3,418	
54.00	Country Office Support Services	37,123		2,373		7,554		7,554		7,554		7,179		4,909	

59.00	**COMPONENT TOTAL**	**60,541**		**4,373**		**12,054**		**12,054**		**12,054**		**11,679**		**8,327**	
	60,541														
93.00	UNOPS Support Services	206,459		27,027		47,376		40,516		37,156		31,241		23,143	
	206,459														
99.00	**GRAND TOTAL**	**3,193,000**		**415,500**		**731,730**		**626,870**		**575,510**		**484,720**		**358,670**	
	3,193,000														
	3,193,000														
	0														

UNDP/TRAC Contribution

Code	Description	Total		1,999		2,000		2,001		2,002		2,003		2,004	
		$	p/m	$	p/m	$	p/m	$	p/m	$	p/m	$	p/m	$	p/m
10.00	**Project Personnel**														
11.97	Consultants (International)	100,000				20,000		20,000		20,000		20,000		20,000	
11.99	Sub Total	100,000				20,000		20,000		20,000		20,000		20,000	
15.00	Official Duty Travel	30,000				6,000		6,000		6,000		6,000		6,000	
16.99	Sub Total	30,000				6,000		6,000		6,000		6,000		6,000	
17.51	Consultants (National)	100,000				20,000		20,000		20,000		20,000		20,000	
17.99	Sub Total	100,000				20,000		20,000		20,000		20,000		20,000	
19.00	**Component Total**	**230,000**				**46,000**		**46,000**		**46,000**		**46,000**		**46,000**	
20.00	**Subcontracts**														
21.00	Local Companies, including financial institutions, legal experts, management and auditing firms	80,000				20,000		15,000		15,000		15,000		15,000	
29.00	**Component Total**	**80,000**				**20,000**		**15,000**		**15,000**		**15,000**		**15,000**	
30.00	**Training**														
31.01	Short courses	10,000				2,000		2,000		2,000		2,000		2,000	
32.01	Study tours	10,000				2,000		2,000		2,000		2,000		2,000	
32.02	Workshops	10,000				2,000		2,000		2,000		2,000		2,000	
33.99	Sub Total	30,000				6,000		6,000		6,000		6,000		6,000	
39.00	**Component Total**	**30,000**				**6,000**		**6,000**		**6,000**		**6,000**		**6,000**	
43.00	Premises (Office Rent)	**30,000**		25,000		5,000		5,000		5,000		5,000		2,500	

40.00	**Equipment**														
47.00	**International Procurement**														
47.02	Equipment	80,000		20,000		20,000		20,000		10,000		10,000			
49.00	**Component Total**	**80,000**		**20,000**		**20,000**		**20,000**		**10,000**		**10,000**			
	Contingency	**80,000**		**5,000**		**15,000**		**15,000**		**15,000**		**15,000**		**15,000**	
99.00	**Grand Total (UNDP/TRAC)**	**500,000**		**25,000**		**107,000**		**102,000**		**92,000**		**92,000**		**82,000**	

Annex 1 – Project Stakeholders

1. The Kenya Association of Manufacturers
2. The Kenya Tea Growers Association
3. The Kenya Tea Development Authority
4. The Kenya Sugar Authority
5. The Kenya Association of Hotelkeepers & Caterers
6. The Ministry of Industrial Development
7. The Ministry of Environmental Conservation
8. The Ministry of Energy
9. The Ministry of Agriculture and Livestock Development
10. The Kenya Power & Lighting Company
11. The Ministry of Planning and National Development
12. The Kenya Industrial Research and Development Institute
13. UNDP
14. The World Bank
15. UNEP
16. The Ministry of Finance (Treasury)
17. UNIDO
18. NGOs that are involved in Energy matters eg KENGO, CAN, FAN, etc.
19. Federation of Kenya Employers
20. Kenya Generation Company (KenGen)
21. Jua Kali Association

Annex 2 - Terms of Reference for Project Staff

A. NATIONAL PROJECT DIRECTOR (NPD)

1. General Description

Provision of overall management administration and supervision. Liaise with relevant Government, bilateral and multilateral donor/lending agencies, and the private sector.

2. Specific Duties

- Report to the Project Steering Committee.
- Ensure that the consultants, subcontracted institutions and other entitiees comply with their tasks within the set timeframe and budget without deviating from the project objectives.
- Ensure throughout the project a systematic coordination of the various consultants, subcontracted institutions and other entities in order to guarantee that the resulting materials/reports will be made with the greatest degree of coordination and completeness to reach the project objectives.
- Organise meetings and workshops for the implementation of the project to permit an orderly and logical organisation of the objectives, activities and results of the project, as well as identify and hire the facilities required for that purpose.
- Draft project reports for tri-partite review, steering committee meetings, and as otherwise required.
- Responsible to the KAM/MoID for overall program financial, administrative and technical activities.
- Coordination and liaison of Government, UNOPS, PSC, PMU and international agencies.
- Coordination and liaison of Government, donor, financial institution, NGO and industrial enterprises.
- Responsible for project funds and equipment.
- Responsible for work plan management and field operations supervision.
- Coordinates all project activities.
- Prepare regular written reports to KAM/M of ID on project implementation progress.
- Perform other project duties as requested by the KAM & Mof ID.

3. Qualifications

- university degree in an engineering field.
- strong theoretical base in energy efficiency and renewable energy technolgies.
- previous project management experience in private sector in Kenya.
- ability to deal/negotiate with government ministries, private sector representatives, financial institutions and donor agencies.
- knowledge of private sector (KAM) set up in Kenya.
- must be computer literate.
- be familiar with the guidelines and operational procedures of the GEF.
- be familiar with UNDP procedures.

B. SENIOR PROJECT ELECTRICAL ENGINEER / ENERGY CONSERVATION SPECIALIST (SPEE)

1. General Description

Provision of administrative and technical support to the National Project Director (NPD) and the Project Management Unit (PMU).

2. Specific Duties

- Report to the NPD
- Assist the NPD in administering project and supervising technical and field operations.
- Work collaboratively with the PMU staff members in planning and implementing technical activities, providing support to the Kenya's industrial enterprises, participating financial institutions and end-users.
- Work collaboratively with the NPD and Chief Technical Advisor (CTA) in preparing monthly and quarterly technical reports for the KAM/MoID, and PSC.
- Assist in the development of Energy network and standards and installationpractices.
- Work collaboratively with PMU staff to coordinate expatriate technical assistance for the project.
- Participate in the evaluation and monitoring of systems installed in the field by enterprises in energy conservation and efficiency.
- Prepare project and equipment lists/budgets as necessary.
- Perform other duties as requested by the NPD.

3. Qualifications

- university degree in Electical Engineering.
- prior administrative experience.
- theoretical and/or practical experience with Energy efficiency and Energy conservation technologies.
- ability to relate well to industry representatives, local officials, financial institutions primary energy suppliers.
- ability to prepare technical reports, scopes of work, evaluation documents and equipment specifications.
- willingness to spend extended periods of time working in the field with ,local officials, and financial institution representatives primary energy suppliers.
- previous Energy Audit experience desirable.
- must be computer literate.

C. SENIOR PROJECT MECHANICAL ENGINEER/ENERGY CONSERVATION SPECIALIST (SPME)

1. General Description

Provision of administrative and technical support to the National Project Director (NPD) and the Project Management Unit (PMU).

2. Specific Duties

- Report to the NPD
- Assist the NPD in administering project and supervising technical and field operations.
- Work collaboratively with the PMU staff members in planning and implementing technical activities, providing support to the Kenya's industrial enterprises, participating financial institutions and end-users.
- Work collaboratively with the NPD in preparing the monthly and quarterly technical reports for the KAM/MoID, and PSC.
- Assist in the development of Energy network and standards and installationpractices.
- Work collaboratively with PMU staff to coordinate expatriate technical assistance for the project.
- Participate in the evaluation and monitoring of systems installed in the field by enterprises in energy conservation and efficiency.
- Prepare project and equipment lists/budgets as necessary.
- Perform other duties as requested by the NPD.

3. Qualifications

- university degree in Mechanical Engineering.
- prior administrative experience.
- theoretical and/or practical experience with Energy efficiency and Energy conservation technologies.
- ability to relate well to industry representatives, local officials, financial institutions primary energy suppliers.
- ability to prepare technical reports, scopes of work, evaluation documents and equipment specifications.
- willingness to spend extended periods of time working in the field with local officials, and financial institution representatives primary energy suppliers.
- previous experience in Energy Audits desirable
- must be computer literate.

D. SENIOR PROJECT CHEMICAL / PROCESS ENGINEER (SPCE)

1. General Description

Provision of administrative and technical support to the National Project Director (NPD) and the Project Management Unit (PMU).

2. Specific Duties

- Report to the NPD
- Assist the NPD in administering project and supervising technical and field operations.
- Work collaboratively with the PMU staff members in planning and implementing technical activities, providing support to the Kenya's industrial enterprises, participating financial institutions and end-users.
- Work collaboratively with the NPD in preparing the monthly and quarterly technical reports for the KAM/MoID, and PSC.
- Assist in the development of Energy network and standards and installationpractices.
- Work collaboratively with PMU staff to coordinate expatriate technical assistance for the project.
- Participate in the evaluation and monitoring of systems installed in the field by enterprises in energy conservation and efficiency.
- Prepare project and equipment lists/budgets as necessary.
- Perform other duties as requested by the NPD.

3. Qualifications

- university degree in Chemical Engineering.
- prior administrative experience.
- theoretical and/or practical experience with Energy efficiency and Energy conservation technologies.
- ability to relate well to industry representatives, local officials, financial institutions primary energy suppliers.
- ability to prepare technical reports, scopes of work, evaluation documents and equipment specifications.
- willingness to spend extended periods of time working in the field with local officials, and financial institution representatives primary energy suppliers.
- previous experience in Energy Audits desirable
- must be computer literate.

E. JUNIOR PROJECT ENGINEER (JPE)

1. General Description

Provision of outreach information and training support for the dissemination of energy efficiency systems in rural areas.

2. Specific Duties

- Reports to the National Project Director.
- Maintain contacts with local industry, rural leaders, financial institutions, NGOs and end-users of primary energy.
- In collaboration with KAM, plan and monitor project-sponsored training programs.
- Coordinates publicity and public relations for project activities.
- Assist local industry in organizing/participating in rural fairs and/or agricultural shows.
- Coordinate planning for project-sponsored study tours.
- Assist local industry with the preparation of instruction manuals in local languages for end-users.

3. Qualifications

- university degree in Mechanical Engineering.
- familiarity/interest in Energy conservation and environment issues.
- previous experience in planning and implementing media and field-based public awareness programs in Kenya
- ability to relate well to industry representatives, local officials, financial institutions and end-users in the field and translate their needs into practical training programs.
- ability to prepare technical reports, scopes of work, evaluation documents and equipment specifications.
- willingness to spend extended periods of time working in the field with enterprises local officials, and financial institution representatives.
- ensure timely maintenance/repair of project equipment
- must be computer literate

F. ENVIRONMENTAL SPECIALIST

1. General specification

Will be the principal environmental advisor to the NPD. Will provide technical input and prepare reports on enviromental management systems of the SME for the PMU.

2. Specific Duties

- Reporting to the NPD.
- Work closely with the PMU Staff to evaluate and advice our engineering innocations to improve environmental impacts of SME .
- Set bench-marks, and periodically review progress, our environmental quality achievement standards for selected SME.
- Responsible for quarterly environmental report on the status of the SME for the PMU.
- Assist in the development of energy networks, standards and installation practices by SME.
- Responsible for field monitoring and evaluation of environmental managerial systems and accreditation to ISO 14000 for SME.
- Perofrm other environmental duties as may be directed by the NPD.

3. Qualifications

- A degree in Environmental Impact Assessment.
- Three years post-qualifications experience of working with either Government or Private Sector.
- Evidence of prior participation in environmental audits or appraisal of industrial and/or commercial enterprise.
- Computer literate.
- Excellent Communication Skills. Evidence of proficiency in English and Kiswahili languages.
- ISO 14000 competent.
- Evidence of good inter-personal skills.
- Evidence of Environmental Report Writing Skills.
- Evidence of leadership in Environmental Project Co-ordination.
- Familiarity with Kenya's Environmental Bill desireble

G. TRAINING COORDINATOR

1. General Specification

The Courses and Programmes Co-ordinator will be the central person for co-ordinating PMU organised conferences, seminars, workshops and training programmes. Will be advisory to the NPD in implementing the Institutional Strengthening and Sustainability.

2. Specific Duties

- Reporting to the NPD.
- Work closely with the PMU Staff and key stakeholders to identify, define and manage training needs.
- In collaboration with KAM. identify and invite trainees/participants and resource personnel
- will develop and supervise on behalf of NPD a five year training strategy,
- will implement and document elements of the defined Trainigng Strategy.
- Responsible for training co-ordination and organisation.
- Responsible for the PMU Public Relations and coordination with Ministry of Environmental Conservation.
- Incharge of PMU report production.
- Prepares workshop/seminar reports.
- Perform any other programme related duties as may be directed by the NPD.

3. Qualifications

- A degree in Resource Management and or Environment and Development.
- Three years post-graduate experience of working within a Government Department in planning and organising trainning/seminars on environment matters .
- Proof of working in a team at departmental level, especially production of reports.
- Proven ability in communication skills.
- Self-driven personality.
- Command of spoken and written English and Swahili languages.
- Evidence of inter-personal and Organisational skills.
- Participation in compiling a study report on climate change is an added advantage.
- Computer literacy.
- Competennce in writing and editing skills.
- Good Public Relations skills.

H. FINANCING SPECIALIST (FS)

1. General Description

Provision of professional administrative, accounting and financial support and reports to the National Project Director.

2. Specific Duties

- Prepare monthly and quarterly financial status reports and ensure availability of funds.
- Provide support to the business management training component of the project.
- Participate in the design, implementation and evaluation of the financing mechanisms carried out under the project.

3. Qualifications

- university degree in economics or finance.
- familiarity/interest in environmental energy conservation.
- previous experience in the financial management of development projects and/or small or medium -scale enterprises.
- previous experience with the preparation of business plans for small companies - highly desirable.
- previous experience with the design of business management training programs - highly desirable.
- willingness to spend extended periods of time working in the field with enterprises, local officials, and financial institution representatives to develop, monitor and refine financial management and credit systems.

I. PROJECT ECONOMIST

1. General Description

Analysis of Policy and Administrative barriers hindering efficient energy utilisation by Kenyan manufacturing industries with emphasis on Small and Medium Scale Enterprises.

2. Specific Duties

- carry out bi-annual surveys on Policy and Administrative requirements for governing energy generation in Kenya and utilisation in Kenya.
- Identify policy and administrative barriers to efficient energy generation and utilisation in Kenya, aimed at formulating an appropriate policy paper for Kenya on Efficient Energy utilisation The areas to be looked into include licencing procedures, financing of both the Electricity Regulatory Board and investors, dispute settlement mechanisms, cost of tariffs, entry and exit of investors, etc.
- Identify for use by SMEs various legistrative measures governing investments in energy conservation projects, to be used in developing " A guide for Kenyan and Foreign Investors participating in Energy efficiency and Energy Conservation projects.
- Participate in preparing of Business Plans for various SMEs participating in the project using SWOT analysis. These to be used in preparing bankable projects by the Financial Specialist.
- Prepare a guide on available Lines of Credit from Kenyan Financial Institutions for undertaking Energy Conservation Projects, for use by potential Investors, especially the SMEs.
- perform other duties as requested by the PMU.

3. Qualifications

- University degree in Economics
- Several years experience in Industrial policy analysis work, especially with an established Industrial Association.
- Demonstrated contacts with Industrial enterprises, Policy making bodies, and Financial Institutions.
- Experience in research/ survey work.
- Ability to write technical reports form surveys/ studies.
- Willingness to spend extended periods of time in field work with privateenterprises, Government bodies, other policy and administrative bodies.
- Must be Computer Literate.

J. CHIEF TECHNICAL ADVISOR (CTA)

1. General Description

Provision of expert professional support to the National Project Director (NPD), the Project Management Unit (PMU) staff and the Project Steering Committee (PSC) in areas related to project design, implementation, management, reporting and follow-on planning.

2. Specific Duties

- Provide international perspective on energy efficiency and energy conservation, project design and implementation activities.
- Provide technical expertise in areas relating to energy efficiency, standards, installation codes of practice, marketing, financing schemes, and training.
- Provide technical assistance in the development of cost-effective energy efficiency systems for small scale enterprises.
- Assist with the design and implementation of in-country and overseas training programs.
- Assist with the preparation of terms of reference and review of CV's for short-term consultants.
- Assist with arranging of study tours for host country Government, project and financial institution personnel.
- Assist with the establishment of a draft set of energy conservation policies.
- Advise the PMU and local industry on the availability and performance of equipment from suppliers in Africa, Europe, Japan, elsewhere in Asia and the US.
- Assist with the establishment of a local capability to manufacture of some energy conservation and energy efficiency equipment.
- Perform other tasks as requested by the NPD, UNDP or PSC.

3. Qualifications

- university degree in engineering, physics, or other technical area.
- at least 5 years previous experience in Africa, at least 5 of which were in senior positions of responsibility for project management.
- demonstrated experience with the design and implementation of energy efficiency and energy conservation projects.
- prior enterprise development and financial management experience highly desirable.
- demonstrated ability to work collaboratively as a member of a Government/industry team.
- demonstrated familiarity/ability to work in close collaboration with international energy companies, bilateral, and multilateral development and international technical assistance agencies.
- be be familiar with the guidelines and operational procedures of the GEF.
- be familiar with UNDP procedures.

K. FINANCIAL ADVISOR

1. General Description

Provision of expert professional support to the National Project Director (NPD), the Project Management Unit (PMU) staff and the Project Steering Committee (PSC) in areas related to UNDP financial policies, systems and controls.

2. Specific Duties

- Assist the national project director (NPD) to establish routines e.g. budget quarterly financial reports etc.
- Facilitate the preparation of budgets, business plans and periodic financial reports within tight deadlines
- Provide international perspective on energy efficiency and energy conservation, project design and implementation activities by sourcing for additional funds as that may be required by project activities.
- Provide financial expertise to the SMEs in areas relating to financialy viable of energy effifiency bankable projects.

3. Qualifications

- A fully qualified accountant, holding either CPA (K), ACCA or ACA.
- at least previous experience in Africa, responsibility for project management.
- prior enterprise development and financial management experience highly desirable.
- Knowledge in computerized accounting system with an added ability to plan implementation of computer system.
- demonstrated familiarity/ability to work in close collaboration with international energy companies, bilateral, and multilateral development and international technical assistance agencies.
- be be familiar with the guidelines and operational procedures of the GEF.
- be familiar with UNDP procedures.

L. ENVIRONMENT ADVISOR.

Provision of expert professional support to the National Project Director (NPD), the Project Management Unit (PMU) staff and the Project Steering Committee (PSC) in areas related to International Environmental Conservation policies and laws.

1. General specification

Will be the principal environmental conservation advisor to the NPD, UNDP and the PSC.

- Will provide technical input and prepare reports on enviromental management systems of the SME for the PMU.

2. Specific Duties

- Work closely with the PMU Staff on environmental conservation to improve environmental impacts of SME .
- Set bench-marks, and periodically review progress, our environmental quality achievement standards for selected SME.
- Perform other environmental duties as may be directed by the NPD, UNDP or PSC.

3. Qualifications

- university degree in engineering, science , or other technical area.
- at least previous experience in Africa on environmental issues.
- demonstrated ability to work collaboratively as a member of a Government/industry team.
- be be familiar with the guidelines and operational procedures of the GEF.
- be familiar with UNDP procedures.
- ISO 14000 competent.
- Evidence of leadership in Environmental Project Co-ordination.

M. ADMINISTRATIVE ASSISTANT

1. General Description

Provision of secretarial and accounting support to the NPD, the CTA and other staff.

2. Specific Duties

- Provide administrative and accounting services to the project.
- Ensure financial monitoring and accounting for all aspects of the project.
- Manage project petty cash fund.
- Monitor expendable materials required by the project and reorder when necessary.
- Receive and distribution of correspondence for the project (faxes, e-mails and letters).
- Send outgoing mail (faxes, e-mails and letters).
- Receive and make phone calls on behalf of project staff.
- Receive visitors and direct them to appropriate PMU staff.
- Maintain project files and a document database.
- Maintain a small project library with publications and reference books.
- Do wordprocessing and preparing document packages.
- Photocopying.
- Provide accounting support as requested by the CTA and Director.
- Other tasks as requested by PMU staff.

3. Qualifications

- Certificate of completion of studies from an approved secretarial or accounting training program.
- Five years previous experience in areas relating to secretarial and basic accounting practices.

N. PROJECT DRIVER

1. General Description

Driving project vehicles for work-related activities and initiation/verification of timely vehicle maintenance.

2. Specific Duties

- Drive project vehicles both in town and to sites in rural areas of the country.
- Deliver mail.
- Keep project vehicles clean, in good repair and with fuel.
- Ensure vehicle maintenance is carried out on a timely basis.
- Other tasks as requested by the NPD and project staff.

3. Qualifications

- Valid Kenya drivers license for at least 10 years.
- Satisfactory references from at least two previous employers.
- Ability to carry out basic vehicle repairs in rural areas.
- Speaks English and Kiswahili

Annex 3 – Terms of Reference for the Project Steering Committee

Article 1
These rules will govern the operation of the Project Steering Committee, herein after called the Committee.

Article 2
The Committee comprises:

- The Director of Industries – Ministry of Industrial Development
- The Chief Geologist – Ministry of Energy
- The Director – National Environment Secretariat
- The KAM Board Representative
- The KAM Chief Executive
- The UNDP representative
- UNIDO representative
- The National Project Director (ex-officio)
- Some Members will be coopted when necessary from time to time. Typical examples are the Financial Secretary in Treasury, Chief Executive of the Kenya Sugar Authority and the Chief Executive of Hotel Keepers Association.

In case that there are changes in the persons or institutions, these will be notified to the KAM Chief Executive, the presiding body of the Committee.

Article 3
The Committee will be chaired by the Director of Industries. If he/she is absent, the meeting will be presided by his surrogate representative.

The National Project Director will report to the Committee on the development of the project activities before each invitation to a meeting.

Article 4
The Committee will meet at least once every three months, and more often if required. The meetings will take place at the Conference Room of the Kenya Association of Manufacturers.

Article 5
The meetings of the Committee will be by invitation from the Chairperson and/or matters to be dealt with in the meeting will be attached to the invitation.

Article 6
At the beginning of each meeting the Minutes corresponding to the previous meeting will be approved and signed, handing over one copy of them to each of the members of the Committee.

Article 7

The agreements arrived at by the Committee will be unanimous. The Committee will develop its actions in the framework of the Agreement signed by the Government of Kenya, the Ministry of Industrial Development UNDP and UNOPS.

Transitory Provision

To the functions of the Committee may be added others which according to its judgement are deemed necessary for obtaining the objectives of the project.

These rules were approved in the installation meeting of the Committee.

Annex 4 – Training Programme and Course Outline

Training will be an important aspect of strengthening local capacity under the project. In-country human and technical resources will be used to plan, implement and evaluate training activities as much as possible.

Training initiatives will focus on the following aspects/approaches:

1. Increase awareness among business owners and operators of the economic advantage to be gained through implementation of energy efficiency measures.
2. Energy efficiency for plant operators.
3. Short-term overseas training.
4. Develop business plans for environmental and energy efficiency actions and indicate cost recovery mechanisms for energy efficiency measures.

Course A
Awareness: How to make energy efficiency important – getting top-management's commitment

Half-day workshop in explaining advantages to be gained through implementation of energy efficiency measures.

In order to achieve top-management support, suitable arguments and an adequate presentation of the proposal have to be prepared, e.g.:

- strengthen economic consideration by relating energy costs to profit (instead as to turnover)
- low energy costs and environmentally sound production should be among the parameters for an integrated optimisation of the company
- focus on the firm's multi-dimensional aspects of competitiveness (e.g. less insurance, higher product quality, improved work environment, image gains, higher motivation of staff, lower operating and maintenance costs, better relation to authorities etc.)
- link energy efficiency to other issues
- promote energy efficiency as a quality indicator for management performance

Course B
Energy Efficiency for Plant Operators and Energy Auditors

1) Electrical – Demand Side Management
   - power factor and power factor correction
   - motors and their efficiencies
   - load factor and load factor improvements
   - efficient lighting
   - speed control and frequency control

2) Furnaces & Boilers – Steam System
   - types of fuels
   - types of burners
   - burner efficiency improvements
   - steam systems and transmission
   - steam utilization, recovery, insulation
   - steam trapping

3) Compressors
   - compressor efficiencies
   - compressed air usage

4) Energy Monitoring & Targeting

5) Energy Auditing and Measurements

6) Maintenance

7) Control Engineering

Course C

Financial Engineering

- technical assessments
- environmental assessments
- economic analysis
- financial analysis
- business plan preparation
- implementation plan
- monitoring plan

Course D: Energy management in industry and service sectors

The goal of the course is to raise the level of knowledge within energy management and environmental impacts of energy use. There is a focus on how energy management could be implemented in organizations.

Contents

- Strategies and action plans
- Integration of energy management
- Success factors
- Strategic training programme
- Energy monitoring- the key to successful energy management
- Choice of energy source and correct energy purchasing
- Presentation of the energy efficiency network in industry

Target group

Energy responsible personnel and technical and administrative managers in industry. Consultants who work with energy management and network systems will also benefit from this course.

Course E: Operation and maintenance of ventilation systems

The course goes through basic requirements for correct configuration of ventilation systems. The course also focuses on how single components of the system can affect the indoor climate, airquality and economy. Some topics are; how to uncover defects, how to control efficiency, unwanted return air, relative humidity and capacity. The education is given in form of teamwork with an instructor. Further there is given guidelines in how to measure and instrument in order to keep a running control of the air treatment plant.

Contents

- Indoor climate
- Ventilation principles and systems
- Room air distribution
- Cooling, compressors
- Heat exchangers
- Ventilator diagrams
- Air humidity
- Control and regulation
- Impurities and cleaning in ventilation system
- Measuring instruments and methods

Target group

Operation and maintenance personnel, technical managers, consulting engineers, contractors, energy efficiency consultants and energy responsible personnel.

Annex 5 – Guidelines for Energy Efficiency Network Development

A. Background

The industrial sector is a large energy consumer in Kenya, it accounts for about 23 % of the total energy consumption. Fuel oil (direct use), electricity (generated from hydro, geothermal and thermal) and diesel oil are the main energy carriers consumed by industry.

Thermal energy consumption in industrial plants tend to be rather high, fuel oil is by far the largest source of this energy. In many plants substantial part of thermal energy is used for steam and hot water production.

Specific energy consumption for all products is very high in comparison with Western standards. Very often managers believe that it is caused entirely by old and inefficient technology, but in reality very often the waste of energy is the main source of high energy consumption by plants. The main reasons for inefficient use of energy are:

- low level of knowledge
- poor management
- lack of maintenance systems & careless technical maintenance and improper operation
- bad habits
- incorrect design and poor workmanship of thermal systems
- poor technical state of equipment due to long operation time and lack of maintenance
- lack of measurement & control equipment
- lack of heat recovery
- historical conditions related to artificial, low energy prices and all its implications
- present political conditions such as lack of clear and consistent policy
- lack of information about possibilities
- lack of institutional structure

Reduction of energy consumption in Kenyan industry is a great challenge, which requires multifarious efforts. There are several factors that have prevented implementation of meaningful energy efficiency measures in Kenya. Among these factors are:

- financial situation of companies
- uncertainty related to structural changes
- poor technical infrastructure
- human mentality and habits
- lack of information dissemination channels

At present, the situation in Kenya has changed in a positive direction. The energy sector has been liberalised. Far more stringent limits for emissions from energy systems to environment are going to be in force when the Environment Management Bill is passed by Parliament. Some companies are willing to participate in costs of audits and demonstration projects.

B. Objective

The main objective of this activity is to initiate long term, systematic process of improvements of energy efficiency in Kenyan industry resulting in substantial reduction of specific energy consumption.

The main tool to achieve this objective will be organisation of the Energy Efficiency Network in selected industrial sectors.

The Network will act not only as an information link between the industry and authorities, but will be important channel to transfer KAM experiences in energy efficiency measures in appropriate industrial sub-sectors. The Network can in fact be regarded as a tool-box for various energy efficiency measures aiming at the industrial sector. Specific "tools" to be put into this tool-box can be:

- implementation of the energy efficiency technologies, products and know-how
- statistics on energy use
- training programmes
- financial engineering
- grant programmes
- interconnection with Clean Production Programme
- modernisation

C. Establishment of an Energy Efficiency Network (EEN)

The first activity is to carry through a feasibility study in Kenya with regard to develop and implement an energy efficiency network.

These activities will be carried out in very close relation with actions by the Ministries of Energy, Industrial Development, and Planning.

The aim is to develop the structure of an Energy Efficiency Network. The Network will be established on a national level, but can be used on an East African level, both in technology transfer and in bench-marking activities. This action will prepare the establishment of national networks through studies of different industrial sectors and prepare the establishment of contact groups in each selected industrial subsector.

The Network's main objective is to encourage the decision-making processes with regard to energy efficiency and environment-friendly energy use in industry, to disseminate information related to energy efficient technologies to the involved industries and to the exchange of experience between related sectors.

Phase 1: Study of the organisational structure
This phase involves a feasibility study of the organisational structure according to local conditions in industry, especially the organisational structure of the SME's in Kenya.

A work meeting will be organised representatives from KAM, FKE, Ministries of Industrial Development, Energy, and Planning in order to exchange information relevant to development of an Energy Efficiency Network.

Phase 2: Analysis of industrial sectors
In this phase, the PMU will analyse the different industrial sectors and study the market analysis which defined the needs and obstacles as well as the state of the art in relation to energy efficiency in industry. This study will be carried out in close collaboration with KAM industrial sector associations, Ministry of Industrial Development, Ministry of Energy, and KP&LC.

A questionnaire will be issued and distributed to the industrial companies (through the industrial associations/organisations). To assess the technological needs of the industrial companies the PMU will study the questionnaire compared with existing sectoral data, and appropriate technologies will be searched for and presented in the form of pre-feasibility studies. The result will be communicated back to the SME associations of the relevant sectors.

During this phase each stakeholder will determine the number of industrial sectors of interest, or the types of industry to be included in an Energy Efficiency Network.

Phase 3: Contact with selected industrial sectors and Technical Advice
During this phase contacts will be made with the individual industries and trade organisations in order to formalise collaboration.

It will be useful to establish a contact group in each selected industrial sector. A contact group can consist of representatives from the organisations and the industrial companies in one sector. The contact group shall assist and give advice with e.g. relevant topics regarding energy efficiency and energy bench-marking.

For PMU this phase also includes giving technical advice to the industrialists when they have to make decisions about technical changes and also for the presentation of their proposals to the KEMP programme.

Planning of the task

	Start Date	End Date
Phase 1	June 2000	December 2000
Phase 2	December 2000	January 2001
Phase 3	February 2001	onwards

D. Information activities

The main objective of this task is to establish routines for dissemination of information with regard to energy efficiency in industry.

The secretariat (PMU at KAM) will act as an information link and ensure the member companies receive targeted information: the right information to the right person in the company at the right time. Information will regularly be disseminated by mail and special issues relevant for many companies in one industrial sector will be discussed in seminars.

The Network will establish its own Newsletter containing general information about different activities in the field of energy efficiency in the participating industrial sectors.

Phase 1: Newsletter/Publications
The national secretariat at KAM will publish a Newsletter containing information on the establishment of the Energy Efficiency Network as well as information on energy efficiency measures, and energy efficiency activities in the industrial sector. The objective is to promote the establishment of the Network, and the participation of the industry itself.

Phase 2: Targeted information
The national secretariat at KAM will disseminate relevant energy efficiency information to the selected industrial sectors and companies. Examples of information are analysis reports and project documentation on newly developed energy technologies and information from other programmes and organisations.

This phase also includes writing articles related to the programme that will be published in the technical, commercial and general press and in the magazines of the trade associations.

Phase 3: Seminars
Organise one seminar, for example combined with site visits. The seminars will focus on technical, organisational, methodological and behavioral measures.
Phase 1 and Phase 2 to be completed and reported in the progress report to KAM and M of ID due on 2 Jan. 2001.

Phase 3 status to be reported in the final report to KAM and M of ID 1st Dec. 2001.

E. Success factors when establishing an Energy Efficiency Network

1. It is important to have complete support from the authorities, e.g. the Minister etc.

2. The objective of the Network must be based on the national energy/environmental policy.

3. Benefits for both industry and the authorities must be clear.

4. Both industry and the authorities must contribute to the programme to ensure success, e.g. make commitments/agreements.

5. Initial contact should be made with the industrial associations/organisation to "sell the idea" – they should then recruit individual companies as members.

6. Start with 3 (energy intensive) industries initially, then when the system works, it is time to expand.

7. If possible, let the industries form an executive committee, which will develop the strategy for the programme, within a given overall political and financial framework (set by the authorities).

8. Establish a contact group for each participating industry. The objective for this group is to ensure that the need in the industry is "visualised" and advice the programme in suggesting activities within their industry.

F. Energy Benchmarking

Energy benchmarking is an important means whereby enterprises can share information regarding energy efficiency. Energy benchmarking refers to the use of indicators – ratios, indices, etc. – to enable valid comparisons to be made between companies in the area of energy use. Such indices may refer (for example) to specific energy consumption for companies operating within the same sector, or they may refer to energy efficiency of specific end use applications in a trans-sectoral setting, or they may even refer to energy management practices and techniques. Within some industry agreements (for example, within the *Norwegian* industrial energy efficiency network), there has been significant use of benchmarking within sectors, based on specific energy consumption data. Within others (for example, within the *Irish* Self-Audit Scheme), member companies have expressed a strong interest in such a scheme. And within others (for example, within *The Netherlands*) work is starting on the development of such indicators for energy-intensive companies. In *Austria*, there has been considerable work in the area of industry networking, and benchmarking is of keen interest in this context.

Because energy benchmarking enables companies to pool data so that they may identify others using best practices in such matters as monitoring and targeting, energy procurement, technology specification, and best practice generally, this is potentially an extremely powerful means of generating collaboration in achieving significant progress in all these areas. Energy benchmarking works best where meaningful comparisons may be made by member companies in searching for best energy practice. However, there are many methodological problems to be overcome in developing and launching such a system, particularly where product ranges and processes are not always stable over time, or homogeneous in nature.

Main tasks:

The main tasks involved in the project will be as follows:

T.1 *Development of a methodology for a multi-sectoral energy benchmarking system – including consultation with industry in order to identify the most useful and practical indicators, along with the issues to be addressed such as company confidentiality.*

T.1.1 Desk research, to identify more fully the approaches that have been used already in such benchmarking schemes – both in the area of energy and of business management more generally.

T.1.2 Consultation with a selection of companies. KAM has determined that some companies are interested in an energy benchmarking scheme as a means of stimulating investment of resources in energy management best practice; however, this consultation will address important issues of detail in the establishment of the benchmarking scheme.

T.1.3 Development of a methodology – including within-sector indices, end-use indicators and other indicators. This task will take into account the use of confidential company data in such a way as to protect individual company interests and concerns. It will also take into account the means of presenting data both longitudinally and cross-sectionally so as to be of maximum utility to participating companies. Methodological issues to be addressed will also include the problems associated with ensuring that the between-company comparisons are truly valid in terms of product, process and company/market characteristics.

T.2 *Development of a data-gathering and data capture and processing system, capable of use in a trans-sectoral setting.*

T.2.1 Development of a specification for the data-gathering/capture system, based on the data requirements identified in task T.1 above.

T.2.2 Development of a data-gathering tool for use with individual companies/plants.

T.2.3 Development of a computerised database for collecting data, and for the generation of indices, reports, etc. This sub-task will have to overlap with the work on development of the reports themselves.

T.3 *Development of a reporting structure and process.*

T.3.1 Identification and analysis of the existing reporting structures used in previous projects.

T.3.2 Development of a reporting structure and format.

T.3.3 Development of automatically generated output tables for use as inputs to the reports.

T.4 *Pilot testing the above.*

T.4.1 Data gathering on a small-sample basis, with a view to testing out the data gathering, data collection, analysis, and reporting systems.

T.4.2 Evaluation of the results with the companies/plants involved.

T.4.3 Modification of the systems and processes as necessary, in the light of the pilot.

T.5 *Launching the pilot energy benchmarking scheme, and marketing it within the SME community.*

T.5.1 Development of full-scale data gathering and reporting processes.

T.5.2 Development of information materials 'marketing' the scheme to the target companies/plants.

T.5.3 Actual promotion of the scheme to the full set of companies/plants.

T.5.4 Full data gathering from the companies/plants involved and signing-up for the scheme.

T.5.5 Production and distribution of the first set of reports to the participating companies/plants.

T.6 *Evaluation of the results; development of plans for future operation of the scheme; evaluation of the effectiveness and usefulness of the scheme in stimulating the search for collaborative best-practice energy management among member companies; exploration of the means by which the scheme may be expanded and marketed so that it would operate on a stand-alone basis.*

T.6.1 Development of survey materials and methodology for evaluating (a) the perceived usefulness, and (b) the impact of the first round of the energy benchmarking scheme. In particular, the evaluation process will focus on the extent to which the scheme assists participating companies to identify areas for improvement.

T.6.2 Survey of a sample of the companies participating in the scheme, including use of a common evaluation questionnaire, and data gathering and analysis of the returned data.

T.6.3 Full evaluation of the results, together with formulation of a plan for continuing and extending the scheme.

T.7 *Dissemination process.*
The information dissemination process will be ongoing through the life of the project. Dissemination will be achieved by (among others) the following means:

T.7.1 Construction of an SME energy benchmarking Website, as appropriate.

T.7.2 Promotion of the project within the KAM members participating in the project. Issuing of short articles on energy benchmarking.

T.7.3 Promotion of participation within the Energy Efficiency Network.

T.7.4 Production of user-friendly benchmarking reports for the participants, and also for circulation to other bodies interested in utilising energy benchmarking within other industry associations.

T.8 *Project management, co-ordination and administration.*

The energy benchmarking activities are essential in developing a rational energy auditing programme and in the establishment of a successful Energy Efficiency Network. These activities will be managed by the PMU within the Awareness and Capacity Building Component.

Principal Outcome

The activity will facilitate the production of comparative energy end-use data within the industrial sector such that companies may make comparisons with the best in the field. This will stimulate energy management actions by companies who can identify the opportunities for energy saving; and it will encourage the uptake of energy best practice based on the performance of the best-practice companies in each sector.

Annex 6 – Business Plan for an ESCO

The business plan framework for an ESCO will consist of the following elements.

- Enterprise Overview, including a description of background, current situation and future plans.
- The Industry, involving an overview of the industry in which the business will operate. (This particular element will be addressed in the background report and country studies).
- The Product/Service offering, involving a description of:
  - the product/service features
  - existing or anticipated competitive advantage
  - current stage of development
  - proprietary status (e.g., patents or trademarks held)
- The Market Analysis, including a description of:
  - target market and customers
  - market size and trends
  - competition
  - estimates sales and market share
- The Marketing Plan, including:
  - pricing strategy
  - sales and distribution strategy
  - promotional strategy
  - service and warranty programme
- Production/Operations Plan
  - planned location of the venture
  - facilities and equipment required to operate the venture
  - manufacturing plans and costs
  - labour requirements and costs
  - environmental and other issues
- The Management Team
- Implementation Schedule and Risks
- The Financial Plan
  - funding requested
  - current financial statements
  - financial projections which would include: profit and loss forecast, pro forma balance sheets, projected cash flow statements and break even analysis.

Annex 7 – Analysis of Energy Saving Potential

While the final selection of demonstration projects will be made during project execution, an indicative list of possible projects is presented in Table 1. The first column indicates more than twenty energy efficiency measures applicable in Kenyan SME energy improvement projects. The measures have been selected based on: a) observations made during walk-through audits during project preparation; b) international experience with measures which offer significant energy saving potential; and c) the results of past energy audits. Most measures relate to steam generation and distribution, waste heat recovery, electric peak demand regulations, and energy management. The selected sub-sectors in Table 1 represent a cross-section of Kenya's SME which exhibit significant potential for energy saving and replicability. The projects will be implemented at enterprises which demonstrate serious commitment to environmentally sustainable development and can obtain the required financing for the proposed activities. It is assumed that the qualifying SME will be prepared to assume the investment risk in accordance with standard Kenyan business practice.

Four indicators for each prospective demonstration project are shown at the bottom of Table 1. These are: the size of investment; the payback period; the annual energy saving; and the associated annual CO_2 emission reduction. The total investment for these projects is KSh 266m (US$ 4.4m) ranging from KSh 5 to 38m. The calculated payback period for the demos is in the range of 1.7 to 4.6 years. The anticipated total annual energy saving would be 172 Terajoules, with an associated total annual CO_2 emission reduction of approximately 16,000 tonnes. Assuming a lifetime of 15 years for the investments, then the total CO_2 emission reduction is 240,000 tonnes.

Any energy efficiency investments sponsored by the project will undergo extensive financial viability analysis. Only investments that are expected to be financially sustainable in accordance with the data provided in Table 2 will be included in the project. Limited GEF financing on the order of approximately 15% of the investment costs will be provided to cover initial incremental transaction costs and additional performance monitoring expenditures. Verified energy savings data are needed to allow the dissemination of project results to other interested SME and to encourage wide replication beyond the GEF project. This process will be standardised to facilitate replication of small investment projects. Energy performance and verification programmes will be established to determine the actual savings arising due to the investments. The energy savings will be used to estimate GHG emission reductions. The four contractual arrangements for measurement and verification of savings from IPMVP will be carefully evaluated and adapted to Kenyan conditions for this purpose.

The data in Table 2 are used to determine the potential for replicability of the demonstration projects. The total annual energy use for the five sub-sectors of 23,595 TJ is approximately 30% of the energy consumption reported in the 1994 energy balance for their respective sectors. Since the selected sub-sectors are a representative cross-section of Kenya SME, it is reasonable to assume that the total SME energy conservation potential can be obtained by dividing «Grand Total for 5 sub-sectors» by 30% to yield the «Total for all SME». The last line in Table 2 then indicates the values based on an assumed 20% penetration rate. Assuming that 20% of SME invest KSh 4,600 m (US$ 76m) to reduce their CO_2 emissions by a total of 280,000 tonnes per year during 15 years, then the total CO_2 emission reduction would be 4.2 million tonnes. At the

GEF project support cost of US$ 3.6 m, the cost of avoided CO_2 emissions will be about US$ 0.85 per tonne.

Table 1. Indicative Demonstration Projects

	Food, Beverage			Textiles			Paper Products			Tea			Hotel		Total
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	
Measures															
Peak demand regulator	•	•	•	•	•	•	•	•	•	•	•	•	•	•	14
Heat pumps														•	1
High efficiency lights	•	•	•	•	•	•	•	•	•	•	•	•	•	•	14
Compressed air leaks	•	•	•	•	•	•	•	•	•						9
Compressed air cleaner				•	•	•									3
Desiccant air dryer	•	•	•		•	•	•	•	•						8
Efficient compressor		•	•		•	•		•	•						6
Make up water heating	•	•	•	•	•	•	•	•	•		•	•			11
Cooling water recovery		•	•		•	•									4
Local insulation mat'ls	•	•	•	•	•	•	•	•	•	•	•	•			12
Prewash water recovery	•	•	•												3
Flow limitation devices													•	•	2
Waste hot air recovery							•	•	•	•	•	•			6
Flue gas recovery														•	1
Flash tank for LP steam	•	•	•					•	•						5
Borehole H_2O treatment	•	•	•	•	•	•		•	•						8
Wood fuel combustion											•	•			2
Wood chips burner												•			1
High efficiency motors		•	•	•	•	•		•	•		•	•			9
Variable speed drives		•	•	•	•	•		•	•		•	•			9
Energy management software	•	•	•	•	•	•	•	•	•	•	•	•		•	13
Window microswitches													•	•	2
Steam turbine		•	•		•	•		•	•		•	•			8
Various other measures	•	•	•	•	•	•	•	•	•	•	•	•	•	•	14
INVESTMENT (mKSh)	5.3	19.3	23.3	8.1	28.2	37.3	9.2	18.6	24	7.7	37.7	37.7	3.2	7	266
PAYBACK (years)	2.6	3.8	4.6	2.1	3.3	4.4	1.7	2.0	2.6	2.7	2.5	3.9	2.3	3	
Annual energy saving (Terajoules per year)	3.2	6.6	14.3	5.7	11.6	13.0	9.5	13.8	26.7	6.1	10.4	49.7	0.4	1	172
Annual CO_2 savings (tonnes per year)	243	462	1430	536	1090	1222	759	1102	2133	649	1107	5291	17	35	16100

Table 2. Energy Conservation Potential in Selected SME Sub-Sectors

Sub-sector Energy sources	Sites in sub-Sector	Total annual energy use in sub-sector (TJ)	Energy saving (%)	Annual energy saving (TJ)	Annual CO2 savings (t/yr)	Annual energy cost savings (mill. KSh)	Total investment required (mill. KSh)
Food & Beverage	140						
Electricity		1,260	28	353	8,098	461	
Fuel oil		3,800	18	684	52,335	322	
Wood fuel		1,900	20	380	45,600	35	
Total		**6,960**		**1,417**	**106,033**	**818**	**2,590**
Textiles	45						
Electricity		700	18	126	2,892	165	
Fuel oil		2,000	11	220	16,833	104	
Wood fuel		3,100	16	496	59,520	46	
Total		**5,800**		**842**	**79,245**	**314**	**918**
Paper Products	29						
Electricity		1,060	5	53	1,217	69	
Fuel oil		1,500	16	240	18,363	113	
Wood fuel		600	16	96	11,520	9	
Total		**3,160**		**389**	**31,100**	**191**	**360**
Tea	80						
Electricity		630	18	113	2,603	148	
Fuel oil		2,100	15	315	24,102	148	
Wood fuel		4,100	34	1,394	167,280	130	
Total		**6,830**		**1,822**	**193,985**	**426**	**1,816**
Hotels	326						
Electricity		480	28	134	3,085	175	
Fuel oil		365	23	84	6,423	40	
Total		**845**		**218**	**9,508**	**215**	**1,076**
Grand Total for 5 sub-sectors		**23,595**		**4,688**	**419,871**	**1,964**	**6,760**
Total for all SME		**80,000**		**16,000**	**1,400,000**	**6,500**	**23,000**
20% penetration		**16,000**		**3,200**	**280,000**	**1,300**	**4,600**

Currency conversion factor: 1 USD = 60 Ksh

Annex 8 - Project Schedule

Component	Year 1	Year 2	Year 3	Year 4	Year 5
1. Capacity Building and Awareness					
Specialised training courses	x x	x x	x x	x x	x x
Regional energy auditing workshops	x x x	x	x	x	x x
Procurement of equipment	xxxxx				
Energy efficiency network development		xxxxxx			
2. Overcoming Financial Barriers					
Guide for Investors	xxxxxx				
ESCO development		xxxxx		xxxxx	
Financial engineering courses, including business plan development and bankable proposal preparation	xxx	xxx	xxx	xxx	
3. Demonstration Projects					
Implementation		xxxxxxxx	xxxxxxxx	xxxxxxxx	xxxxxxx
Monitoring and evaluation		x x	x x	x x	x x
4. Institutional Strengthening, Sustainability					
Preparation of detailed workplan					
PMU Staff	xxx				
specialised short courses					
study tours	x x	x x	x x	x x	
international conferences	x	x	x		
secondments	x x	x x	x x	x x	x x
energy use database		xx	xx	xx	xx
Reporting (quarter, annual, final)	xxxxxxxx	xxxxxxxx			
	x x x x	x x x x	x x x x	x x x x	x x x x
Project Monitoring and Evaluation	x x	x x	x x	x x	x x

Annex 9 - Incremental Costs

Broad Development Goals

The provision of adequate energy for the growth of Kenya's industrial sector is the broad development goal of this project. At present, there is a serious shortfall in electrical power generation. This project will not only help bring the peak electrical demand in line with generation capacity but also it will assist small and medium enterprises to reduce production costs through increased energy efficiency, thereby increasing profits.

Baseline

An assessment of the current situation points to several barriers which prevent the significant energy conservation potential of small and medium enterprises in Kenya from being achieved. The first is a lack of awareness and information about the potential benefits of increased energy efficiency. Although limited energy efficiency activities have been undertaken in Kenya; it has been a relatively small amount and it has not been conducted systematically. A second barrier resulting in this limited follow-up is the limited capability among small and medium enterprises to obtain financing for energy efficiency investments. Personnel have received insufficient training linking the physical parameters and possibilities of energy conservation with the preparation and financing of profitable investments. At present, financing energy efficiency projects is restricted to a few enterprises, most of which are either larger subsidiaries of internatinal companies or have been involved in subsidized donor-funded activities. Local financial institutions are unaware of the significant potential market related to investing in energy efficiency; and are unfamiliar with financial mechanisms which can open this market. A third barrier that hinders the development of more energy efficient industry is the limited number of actual demonstrations of enhanced energy efficiency through investment. While many firms have taken "no" or "low" cost housekeeping measures, very few have undertaken the investments in new plant capacity to improve energy efficiency and therefore, profitability. The recommendations of past audits have only been followed in a limited number of cases; and there is a need to develop more success stories to engender confidence within the SME community to invest in such projects on their own financial merit. Finally, Kenya possesses few, if any, institutions to develop sustainable energy efficiency activities. This is exemplified by a lack of dedicated policy and guidelines, a lack of knowledge of international best practice, and a lack of capacity to implement energy efficiency measures. In the absence of this GEF supported project, the pattern of minimal to modest energy efficiency improvement is likely to continue.

Small and medium scale enterprises in Kenya utilise a supply-side approach to energy use. They focus on utilizing the cheapest fuel rather than minimising energy costs per unit of output. There is a general lack of knowledge of life-cycle economic and financial analyses methods and their application to energy use within industry. The project seeks to widen this perspective and reshape the decision making framework as applied in SME in Kenya.

Global Environmental Objective

The global environmental objective of this project is the reduction of GHG emissions from the small and medium-sized industrial enterprises. This objective will be achieved by removing the four barriers that have been identified to the improvement of the efficiency of energy-use in this sector

(see below). This is consistent with the goals and guidelines of GEF Operational Program 5 Removing Barriers to Energy Conservation and Energy Efficiency.

Alternative

Component 1: Capacity Building and Awareness Raising

This component will address the training needs of SME personnel who will be involved in energy efficiency activities. Training will be delivered by local, regional and international specialists. Throughout the project, the training materials will be turned over to Kenyan institutions to enhance their capacity to provide future training thereby ensuring sustainability. The training of SME personnel will be delivered through energy auditing workshops and specialised courses for energy managers. This training will be designed to raise awareness of potential energy conservation measures and to instill capacity to implement energy efficiency measures. An industrial energy efficiency network will be established in the later years of the project to encourage and facilitate dialogue among energy managers.

Component 2: Removing Financial Barriers

This component will facilitate financing of energy efficiency activities through a variety of training and business development means. Specific activities will include financial engineering courses, business plan development, and bankable proposal preparation. The project will enable the emergence of energy service companies. Specific training will be offered through specialised short-courses, workshops and seminars; and delivered to all relevant stakeholders including, project engineers, SME owners, financiers, and equipment suppliers. The principal output of this project component will be the development of fundable project proposals utilizing new financing mechanisms. These schemes will address the institutional, policy and legal aspects of energy efficiency investments, with a focus on indicating profitable investments. Enterprises will receive training in market analysis and financing methods which will lead to the realisation of bankable projects. Financial engineering courses will be offered to train SME personnel and other project developers in the conduct of life-cycle energy and economic analysis, including environmental considerations. In addition, the relevant information needed by potential investors will be assembled in a Guide for Investors -- which will cover legal, financial, and project development concerns.

Component 3: Financing and Implementing Demonstration Projects

The transaction costs associated with developing demonstration projects will be covered by the previous project components. In addition, the GEF support will provide a portion (up to 20%) of the costs of between 12 and 15 demonstration installations to cover the incremental costs and ensure financing of a selected number of demonstration projects. The demonstration projects, as outlined in the body of the text, will be selected on the basis of past performance, potential energy savings, willingness and ability of the enterprise to obtain the additional necessary funds from other sources, potential replicability, and potential GHG savings. These projects will be executed along the lines of small-scale projects; and funds will be released to cover the incremental costs of the demonstrations, which are largely anticipated to be learning-related costs. The demonstration installations, to be selected by the steering committee, will be expected to share information about performance freely.

Component 4: Institutional Strengthening and Project Management

One purpose of this component is to strengthen the PMU to undertake and effectively execute the five year project. Ultimately, this capability will be established at KAM to enable it to become a focal point for energy efficiency activities in Kenya. This will be accomplished through formal training in Kenya and abroad, as well as through on-the-job training through the resident international technical adviser. Having developed the fundamental capability to assess energy and global environmental issues, the PMU will be well placed to perform GHG emission inventories, contribute to national energy and environment policies, and establish guidelines for the implementation of globally beneficial energy efficiency measures.

Incremental Cost Matrix

The incremental costs and benefits for each project component are summarized in the incremental cost matrix (Table I-1). For Component 1, awareness of energy efficiency as a "win-win" proposition would remain at a low level without the project. After project completion, there should be greater understanding among SME operators of both the economic and environmental benefits of improving energy efficiency. For Component 2, SME's would remain unable to obtain financing for energy efficiency projects in the baseline, whereas in the project case, they are trained to prepare projects for financing. In the baseline, a limited number of energy efficiency projects would be financed because of the limitation on know-how for financing and implementing energy-efficiency projects. Under Component 3, the project will select about 14 demonstration projects for partial GEF financing and assist in obtaining the requisite financing from other sources. Cost recovery and careful monitoring of costs and energy consumption will be an essential part of the demonstrations. This will help propel SME's in Kenya toward greater investment in energy efficiency. Finally, under the baseline, the institutional arrangements in Kenya are not particularly favorable for investing in energy efficiency. Under Component 4, energy service providers and other institutions will be strengthened to be able to support investments in increased energy efficiency.

In summary, under the baseline conditions, the limited human resource base, the weak institutional structure, and the limited capabilities of the financial sector to evaluate and provide loan financing for energy efficiency investments will continue to constrain the energy efficiency of the small and medium enterprise sector. There would be few energy efficiency investments undertaken in this sector, and its GHG emissions would continue to grow. At present, the emissions from this sector are estimated at 7 m tonnes/year of CO_2 and emissions are expected to increase steadily with the growth of the SME sector.

Under the project case, the identified barriers are removed and energy efficiency investments begin to occur. These investments will result in energy savings, reduced CO_2 emissions and some peak demand reduction from the SME sector. Under the project case, about 20% of the SME's in Kenya could be encouraged to improve their efficiency of energy use by 20%, which would account for a reduction of 280,000 tonnes of CO_2 emissions per year.

The costs of project activities come to $8.603 m, about $3.513 m of which is attributable to the incremental costs of barrier removal. The remaining US$5.090 m will be contributed by the SME owners themselves (US$4.590m) and UNDP (US$0.5m).

Additional Benefits

The project may have additional domestic benefits in terms of the new energy efficiency business opportunities which are opened up and a reduction in local air pollution associated with small and medium enterprise energy efficiency. Neither of these additional benefits have been included in the incremental cost calculations.

Table I-1 Incremental Cost Matrix

Component	Baseline	Alternative	Increment
1. Capacity Building & Awareness Raising	**Global:** SME's emit GHG's-- unaware of "win-win" nature of energy efficiency	**Global:** SME's see environmental potential of energy efficiency	**Global:** SME's view energy efficiency as "win-win" proposition
	Domestic: Little or no awareness of energy efficiency	**Domestic:** SME's see economic potential of energy efficiency	**Domestic:** Awareness of economic potential for energy efficiency
	Cost: -0-	**Cost:** US$430,000	**Cost:** US$430,000
2. Removing Financial Barriers	**Global:** SME's cannot prepare & obtain financing for energy efficiency projects	**Global:** SME's taught how to prepare proposals and obtain financing fo energy efficiency projects	**Global:** SME's prepare "win-win" energy efficiency projects
	Domestic: few, if any, energy efficiency investments made	**Domestic:** financial sector expands its capability to loan	**Domestic:** Profitable energy efficiency loans made
	Cost: US$40,000 (SME's)	**Cost:** US$ 860,000	**Cost:** US$900,000
3. Financing & Implementing Demo Projects	**Global:** Few, if any, financed energy efficiency projects implemented	**Global:** Energy efficiency demos partly financed from GEF – financing & cost recovery critical	**Global:** Financing of "win-win" projects demonstrated widely
	Domestic: Few, if any, energy efficiency loans undertaken	**Domestic:** SME's and financial institutions learn to prepare & process energy efficiency loans	**Domestic:** Energy Efficiency loans made available
	Cost: US$4,400,000 (SME's)	**Cost:** US$5,150,000	**Cost:** US$750,000
4. Institutional Strengthening & Project Mgt	**Global:** Kenya retains weak institutional structure for energy efficiency	**Global:** Institutions strengthened for "win-win" projects	**Global:** ESCO's and energy efficiency projects operate
	Domestic: Weak institutional framework & project mgt capabilities	**Domestic:** Project implemented	**Domestic:** Institutions possess ability for "win-win" projects
	Cost:US$540,000(UNDP); US$150,000(SME's)	**Cost:** US$1,843,000	**Cost:** US$1,153,000
TOTAL PROJECT **Global Environmental Benefits**	SME's emit a growing GHG emissions Barriers prevent investment in increased energy efficiency; Projected Emissions from SME Sector: 7m tonnes CO_2 /yr	Barriers to increased energy efficiency removed Significant CO_2 emission reductions will be achieved Potential Emissions from SME Sector: 6.6m tonnes CO_2 /yr	Barriers to energy eff. removed CO_2 savings from SME Sector will accrue Potential Emission reductions of up to 280,000 tonnes CO2/yr
Domestic Benefits	Limited energy efficiency investments and weak energy efficiency industry Electricity outages common Little or no attention paid to local air pollution from SME's	Energy efficiency investments common – energy efficiency industry grows Industry begins to shave peak demand Local pollution from SME's reduced	Energy efficiency improves Peak demand reduced Local pollution reduced
Cost	US$ 4,590,000 from SME's US$ 540,000 from UNDP	US$ 8,323,000 total, including baseline funding plus GEF and UNDP contibution	US$ 3,193,000 requested from GEF

Annex 10 – Logical Framework

Summary	Objectively Verifiable Indicators	Means of Verification	Critical Assumptions and Risks
Global objective is climate stabilisation by reducing CO_2 emissions	Quantified CO_2 emission reductions	National GHG inventories and reports to UNFCCC	Consistency with GOK policy
Specific objective is removal of barriers to increased energy efficiency in SME	Identified barriers to energy efficiency removed	Evaluation reports	GOK policy which facilitates SME investment in energy efficiency projects
Output 1 **Capacity Building among SME; and increased awareness of energy efficiency possibilities**	Assessment of SME structure; Training programme prepared and given to qualified SME staff; identification of interested SME; training needs assessment;	SME sub-sectoral structure identified; Review and Evaluation Reports; expression of interest by SME; increased SME enquiries regarding energy efficiency oppotunities; increased capacity to develop energy efficiency projects.	SME participation; availability of financial resources; energy efficiency becomes a higher priority among SME;
Activity 1.1 Specialised short courses	Training manuals; 100 trained professionals; energy auditors trained and accredited.	Training reports; Increased number of energy audits in 8 major regions of Kenya; creation of a network of energy auditors.	SME participation; sufficient number of capable professional to benefit from the training.
Activity 1.2 Seminars and workshops	Good seminar/workshop attendance; presentation and open discussion of common energy use problems	Evaluation reports; Increased dialogue between SME and financial institutions.	Participation of SME staff and financial institution personnel
Activity 1.3 Operation and maintenance skills	Awareness & use of control and monitoring equipment	Reports document improved energy performance	Qualified maintenance personnel
Activity 1.4 Industrial energy efficiency network	Network established and active; industrial sub-sector energy use benchmarking;	Progress & evaluation report; results of energy audits reports widely disseminated	Increased dialogue and cooperation among SME and other stakeholders.

Annex 10 – Logical Framework (continued)

Summary	Objectively Verifiable Indicators	Means of Verification	Critical Assumptions and Risks
Output 2 **Financial barriers overcome**	Financial mechanisms adopted and operational	Progress & evaluation reports	Favourable GOK policy
Activity 2.1 Guide for investors	Preparation of a comprehensive guide for investors; adoption of the Guide by public and private sector stakeholders;	Publication of the guide by the project; endorsement by GOK; Increased investor interest in energy efficiency projects	Active participation by SME, financial institutions and government ministries; Guide will provide reliable and useful information for project development; Guide updated regularly to include lessons learned from demo projects
Activity 2.2 Course in financial engineering	Increased knowledge of fundamentals of life-cycle energy and economic analysis; 40 professionals trained; Business plans developed & acceptable to SME's & financing institutions; Preparation of bankable proposals; 20 proposals prepared; 12-15 proposals accepted & implemented.	Progress reports to show certifications by training institutes; Project evaluations; Progess reports show ng projects being financed & implemented; New financial mechanisms developed and acceptable to SME.	Active participation of SME, local financial institutions, and other stakeholders; financing becomes applied to viable projects; energy efficiency projects widely replicated based on successes.
Activity 2.3 Feasibility studies	14 feasibility studies completed in accordance with sound financial engineering principles.	Evaluation; studies completed in accordance with acceptable international standards; trained energy auditors participate.	Commitment by the SME; qualified staff to conduct technical, economic, financial and environmental analyses.

Annex 10 – Logical Framework (continued)

Summary	Objectively Verifiable Indicators	Means of Verification	Critical Assumptions and Risks
Activity 2.4 Development of Financial Mechanisms and Project Financing	14 project documents prepared; energy efficiency project transaction costs are reduced by preparation of replicable financing schemes; financing secured.	Energy service agreements and investment agreements signed; models of novel financial mechanisms will be prepared and disseminated.	Favourable GOK policy and favourable investment terms through local financial institutions.
Activity 2.5 ESCO development	Development of business plans for ESCOs; Favorable institutional framework developed for emergence of ESCOs; ESCO's established.	Progress reports & evaluations; ESCOs deliver viable energy efficiency projects acceptable to SME; ESCO business becomes profitable.	Favourable business climate and GOK policy; local energy and engineering companies become interested in energy service business; evolution of more entrepreneurial energy service companies.
Output 3 **Demonstration projects**	Energy Efficiency Projects identified; 14 projects identified	14 demo projects selected	Commitment by the SME and financial institutions; GOK to enact appropriate legislation supporting energy efficiency
Activity 3.1 Implementation of Demo Projects	SME are prepared to invest in profitable energy saving projects; Additional financing secured—loans repaid; 14 projects financed & successful through project;	Commissioning completed as shown in progress reports and evaluation; anticipated energy savings and GHG reductions are realized; financial benefits are realized.	SME's satisfied by project preparation will actually implement work; Demo project results and critical success factors documented; further energy saving benefits will be attained through replication in all SME sub-sectors.
Activity 3.2 Measurement and Verification	Reports documenting energy savings produced and available; energy saving and GHG reductions of at least 20% achieved	Evaluation reports available; Measurement of savings according to Int'l Performance Measurement and Verification Protocol.	Confirmed energy savings and GHG emission reductions using internationally acceptable methods.

Annex 10 - Logical Framework (continued)

Summary	Objectively Verifiable Indicators	Means of Verification	Critical Assumptions and Risks
Output 4 **Institutional strengthening within the Project Management Unit**	Creation of a qualified PMU	Detailed workplan for project execution	Potential for harmonious and effective cooperation within PMU and with stakeholders
Activity 4.1 Establishment of PMU	PMU staff engaged and PMU office established.	PMU recognized as a viable professional organization for project execution; Charter documents approved by Board of Directors.	Support of principal stakeholder Boards at KPLC and KAM; SME recognition and adoption of PMU to execute the project for the benefit of SME.
Activity 4.2 Specialised short courses for PMU staff	Specialised training of PMU staff completed; six staff receive training; enhanced PMU capacity to train local energy professionals	Certification by national and international training institutes as shown in progress reports	Trained personnel to remain with the project; PMU to be a pivotal factor in the development of profitable and replicable energy saving projects.
Activity 4.3 Study tours	Exposure and increased knowledge of international practices	Progress reports and evaluations show enhanced prep or efficiency projects	Trained personnel to remain with the project
Activity 4.4 International conferences	Participation in international experience exchange	Presentation of technical papers; results discussed in international forums; international dissemination and peer review of results.	Technical merit of results
Activity 4.5 Secondments	Exposure to/and increased knowledge of international best practices	Enhanced capacity to develop energy efficiency projects in accordance with international standards and practices	Trained personnel to remain with the project; increased confidence to develop sound energy efficiency investment projects.

Annex 11 - IFC/GEF SME Program

Program Summary Description

The Small and Medium scale Enterprise Program (SME Program) is a joint initiative of the Global Environment Facility (GEF) and the International Finance Corporation (IFC) of the World Bank. Funding has been provided by the GEF, totaling US $20.8 million. The IFC is acting as the executing agency for the Program. The objective of the Program is to stimulate greater involvement of private sector small and medium scale enterprises in addressing two specific GEF objectives – the sustainable use and conservation of biodiversity and reduction of greenhouse gases.

Institutions experienced in working with SMEs in GEF eligible countries will be selected by IFC to act as Intermediaries for the Program. Each of these Intermediaries will receive from US $500,000 to a maximum of US $1,000,000 from the Program, in the form of a long-term low interest rate loan (up to ten years at 2.5 % p.a.). The proceeds from these loans will be used by the Intermediaries to provide financing (either debt or equity) to SMEs or SME projects which address the GEF climate change and biodiversity objectives, as well as to pay certain costs incurred by the Intermediary in identifying, analyzing and financing the SME Projects. The Intermediaries and the SMEs are expected to provide or secure co-financing for a significant portion of the Project costs, where possible.

The SMEs or SME projects which receive financing will vary in size, but generally will have a total asset value less than US $5,000,000 – depending primarily on the geographic region in which they operate. The amount of Program funding that will be provided by the Intermediaries to any one SME or an individual project will also vary accordingly – there is no prescribed minimum, but the maximum is US $250,000 per project.

SME Projects

Two kinds of projects may be financed by the Intermediaries using SME Program funds:

a) Climate change projects – that reduce the production of greenhouse gases by:
   - removing barriers to energy conservation and energy efficiency. Energy efficiency/ conservation projects include replacing inefficient heating or power systems or increasing insulation.
   - promoting the adoption of renewable energy by removing barriers and reducing implementation costs. Renewable energy projects include power generation from wind, biomass, mini-hydro, geothermal and solar photovoltaics.

b) Biodiversity-projects – that sustainably use or conserve natural biological diversity in one of four ecosystems;
   - arid and semi-arid ecosystems
   - coastal, marine or freshwater ecosystems
   - forest ecosystems, or
   - mountain ecosystems

Only SME Projects, which demonstrate both a positive environmental impact in terms of the GEF objectives and have a basic financial viability, will be eligible for financing.

The SME Program Intermediaries

Intermediaries selected to participate in the Program will have the following characteristics:

a) Financial viability: It will be necessary for the SME Program to assess the self-sufficiency of the proposed Intermediary and its ability to handle the interest and principal payments of the loan.
b) Experience with SMEs in their region: The Intermediaries selected will be institutions that have an existing network of contacts and relationship with SMEs and a pipeline of projects which meet the GEF objectives.
c) Environmental and financial technical expertise: The Intermediary will have on staff or else will contract to obtain the expertise necessary to identify, analyze and finance SMEs and SME projects that both meet the GEF objectives and are commercially oriented.

A standard loan agreement will be signed between IFC and each Intermediary. There will be a number of positive covenants provided by the Intermediaries relating to the use of the Program funds, the number of SME projects, which the Intermediary will finance and the maximum amount of Program funding which will be provided to any one SME.

The Program will bear a portion of the costs that the Intermediary will incur in identifying, analyzing and structuring the financing of the SME Projects. These costs will be reimbursed to the Intermediary in the form of a fee payable by the Program on closing for each SME Project financing. There will also be an annual monitoring fee paid to the Intermediary for the life of the financing provided to each SME Project. A major incentive to the Intermediaries, in addition to the cost recovery feature inherent in the fees, is the potential for the Intermediary to retain up to 50 % of all Program capital that is recovered from the SMEs.

Annex 12 - Demonstration Projects

A. Demonstration Project Identification

During project preparation the team visited the following SME:

- Allpack (paper and paperboard)
- Kenya Breweries Ltd (Food and Beverage)
- Kapi Ltd (Manufacturer, SME)
- Kenya Tea Development Authority (KTDA) (Tea)
- African Highlands Produce Company Ltd (Tea)
- Bedi Investment Ltd (Textile)
- The Stanley Nairobi (Hotel)
- Umoja Ventures (Rubber)
- Chemelil Sugar Company Ltd. (Sugar)
- Kisumu Paper Mills Ltd. (Paper)
- Collins Mercantile Services Limited (ESCO)
- Bamburi Cement Ltd. (Large enterprise)

Some 20 measures for improvement of energy efficiency were identified and an economic assessment of each measure was completed for a typical factory of the sub-sectors identified by the mission team.

Two types of projects were considered:
- Small scale projects: Investment between 3.000.000 KSh and 6.000.000 KSh
- Medium scale projects: Investment over 6.000.000 KSh

Calculations were made to evaluate the pay-back period for the total investment of each possible demonstration project including all the costs other than the construction.

The basic data for these costs are the following:
- Energy audit cost: 2 to 3 % of the construction costs,
- Drawing and technical specifications: 15 % of the construction costs,
- Project management: 15 % of the construction costs,
- Profit margin for the ESCO: 13 % of the construction costs,
- Temporary financing: calculated on the same basis as the financing charges for a period varying between 8 to 12 months of the project implementing period,
- Energy management: Estimated between 750.000 Ksh and 1.200.000 Ksh,
- Financing charges: calculated for the reimbursement period (pay-back period)

B. Audit results of the Kenya Energy Management Programme (KEMP)

During the Kenya Energy Management Programme (KEMP), KAM completed 30 audits in Kenyan industrial enterprises. Each of these included complete audit reports with

recommendations for energy efficiency improvements. There was no systematic follow-up (monitoring, evaluation) included in the programme. Nonetheless, KAM has received some feedback, as indicated here.

Of the 30 enterprises in the programme; five enterprises undertook to improve their energy efficiency by implementing cost effective measures as recommended by KAM. The following five enterprises undertook to implement many of the recommended improvements. In each case, KAM was recalled to make further recommendations. These studies are underway on a fees-for-service basis.

Name of enterprise	**Energy efficiency investment required** **Million KSh (Million USD)**
Kenya Breweries	20 (0.3)
Highlands Tea Growers	100 (1.6)
Rivertex (textiles)	20 (0.3)
Nayuki Textile	5 (0.1)
Mombasa Towels (textiles)	10 (0.2)

The recommended improvements at the remaining 25 enterprises in the KEMP consisted of "housekeeping" measures which typically required much less than one million KSh at each facility. There was no systematic follow-up and no results have been reported.

C. Demonstration Project Selection

It was not possible to choose the demonstration projects according to sectors because Kenya is not fully developed industrially. Certain sectors have one of its kind. But the developed sectors are fully represented. Also regions of Kenya were taken into consideration when the demonstration projects were being chosen.

After talking to the KAM board it is found that the choice of the demonstration projects may be revisited when the project starts at the first stakeholders' meeting. At the moment they are distributed as follows:

Coast Region

Umoja Rubber- Rubber Industry – Possible electricity generation by wind. Most of the electricity generation at the coast is diesel power. Umoja Rubber is one of the biggest electricity consumers at the coast.

Nyika Region
Shaba Hotel. This is an hotel in the national park. There is plenty of sunshine. The hotel uses diesel generators for its electricity. There is no reason why Solar Power should not be used.

Central Region
Next to Mt. Kenya there is the Nanyuki Textile Mills. The mills use a Residue Fuel Oil Boiler yet there are mountains of sawdust just being burnt. There is no reason why the mills cannot use a sawdust fired boiler. Sawdust is cheap and readily available.

Midwest Region
African Highlands – there is plenty of hydropower available. Already, 10% of electricity requirement is locally generated. The local generated electricity costs the company only KSh 2/= while electricity from the national greed is KSh 4/=. It is important to encourage this factory and all the other Tea factories around to generate their own hydro-electricity.

Far west Region
Muhoroni Sugar/Chemelil Sugar.
Quite an amount of electricity is generated using Residue Fuel Oil. These factories suffer from chronic shortage of electricity yet can generate their own electricity using bagasse. There is plenty of bagasse produced by the same sugar mill which is just burnt in the fields. This will be a demonstration for all the other sugar factories.

Annex 13

A UNIDO Report on Ecologically Sustainable Industrial Development for the Jua Kali Enterprises In Kenya

Summarised by: *Mr. Charles F.L. Mbakaya, UNIDO National Consultant, Nairobi*

Based on Work by: Dr. Mohammed Eisa, Project Leader, UNIDO, Vienna; Dr. Laszlo Kovacs, International Consultant, Budapest; Dr. Mohammed Tigani, International Consultant, Vienna; Mr. Charles F.L. Mbakaya, National Colsultant, Nairobi; Mr. Fidel Mumina, National Consultant, Nairobi; Mr. Peter Kamau, National Consultant, Nairobi.

Nairobi, November 1998

Summary

This report is a summary of the environmental survey of the Jua Kali Enterprises (JKE) conducted by UNIDO in 105 worksites in Nairobi in July 1997 and a review of Kenyan policy documents on environmental management. Results of these activities indicated that most JKEs were economically potent as they had variable but substantial monthly turnovers and provided employment for a large proportion of the population. Although the quality of most of their products was good by national standards, there was room for improvement if the export market was to be effectively targeted. Most JKEs impacted negatively on the environment, generating all forms of waste that contaminated the air, soil, water and sewage systems. Current national policies required a review and an update if an enabling environment for ecologically sustainable industrial development (ESID) was to be realised in Kenya. JKE artisans complained that their productivity and quality of products was impeded by lack of permanent worksites, enabling infrastructure, access to new technologies and standards, credit and markets as well as work safety gear and awareness. Thus, there was great need for UNIDO to continue with its noble activities of facilitating the process to support the government and other stakeholders to institutionalise ESID in Kenya. Such an initiative would in the long term optimise the processing of new materials in the JKEs to minimise wastage and environmental pollution. Efficiency on the usage of energy and other utilities such as water, fuel and electricity would also minimise the rate of depletion of existing reserves. Similarly, work health, safety and productivity needed to be improved through intensification of awareness creation among the artisans. In the circumstances, there was indeed a great and urgent need for the government, in collaboration with UNIDO/UNDP and other stakeholders, to support a full programme on ESID in Kenya. This was particularly necessary considering that the country is projected to become a Newly Industrialised National by the year 2020 when the challenges on environmental management will indeed be enormous.

Annex 14

The Kenya Association of Manufacturers

The Kenya Association of Manufacturers (KAM) is representative organisation of industry in Kenya. It was constituted as a corporate body in 1959 to unite industrialists in a powerful organisation to encourage investment and develop the industrial potential of Kenya.

The Association is a non-political and non-profit making organisation dependent upon the annual subscriptions of its members for funds. Ordinary members are restricted to persons, firms, and companies directly engaged in manufacturing, processing or any other productive methods. Associate membership is extended to other companies and firms who, by the very nature of their business, have a direct interest in expansion of industry, e.g. financial institutions, insurance companies and consulting firms. The Association acts as the voice of manufactures in Kenya providing an essential link for co-operation and communication between Government and the manufacturing sector.

The corporate mission of the Association is the facilitate industrial growth and development by promoting and protecting the interests of manufacturers as well as encouraging discussions amongst its members of all problems that have effects on industries in Kenya.

Examples are those that relate to adverse policies, availability and quality of manufacturing inputs, quality of products, identification of the markets and advising Government on possible measures to address those problems while collaborating with all concerned in seeking solutions that satisfy the needs of the members.

The specific objectives of the Association are:

- Lobbying for policy changes in taxation, tariffs, incentives and licences and advising the members on their effects on trade and investment.
- Giving technical advisory services and conducting training courses and seminars for members in specialised fields.
- Giving guidance on potential markets and marketing of manufactured goods both locally and abroad through trade fairs and exhibitions and dissemination of information related to export trade.
- Maintenance of proper quality standards of manufactured goods in relation to pricing.

The Association is increasing its membership to cover all industries operating in the country. This will make the Association the single voice of manufacturers. It is expanding its membership to include small scale industries who have until now been excluded.

The Association believes that private enterprise is essential to progress and prosperity and that national welfare and industrial expansion are synonymous. the Association further believes that only through a strong members' Association can industry play its effective role in economic expansion of a developing country such as Kenya.

KAM has a computerised programme (TINET) which allows members access to information on other manufacturers in the PTA/COMESA region. This facilitates sourcing of raw material and helps to identify markets for export products.

Over the years, KAM in collaboration with Kenya Export Development Support (KEDS), Export Promotion Council (EPC), Department of External Trade (DET), and the Ministry of Industrial Development have participated in various trade fairs internationally and within the PTA/COMESA region with an aim of promoting traditional and non-traditional exports as a means of addressing the twin goals of increasing foreign exchange earnings and developing an export culture in Kenya. During these trade fairs and exhibitions, KAM members secured attractive export orders. The programme is ongoing. KAM in conjunction with the Ministry of Energy and Ministry of Industrial Development has established an Energy Conservation and Management Programme for industry in Kenya. The programme focuses on areas in which industry can conserve energy and environment through efficient utilisation of installed capacity.

Annex 15 – References

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