



**REQUEST FOR CEO ENDORSEMENT**  
**PROJECT TYPE: Full-sized Project**  
**TYPE OF TRUST FUND: GEF Trust Fund**

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**PART I: PROJECT INFORMATION**

Project Title: <i>Industrial Energy Efficiency Improvement in South Africa through Mainstreaming the Introduction of Energy Management Systems and Energy Systems Optimization</i>			
Country(ies):	South Africa	GEF Project ID: <sup>1</sup>	5379
GEF Agency(ies):	UNIDO	GEF Agency Project ID:	120487
Other Executing Partner(s):	Department of Trade and Industry (dti) Department of Energy (DoE), National Cleaner Production Centre of South Africa (NCPC-SA) The South African National Energy Development Institute (SANEDI)	Submission Date: Resubmission Date:	05/08/2015 09/29/2015
GEF Focal Area (s):	Climate Change	Project Duration (Months)	48
Name of Parent Program (if applicable): For SFM/REDD+ <input type="checkbox"/> For SGP <input type="checkbox"/> For PPP <input type="checkbox"/>	N/A	Agency Fee (\$):	548,766

**A. FOCAL AREA STRATEGY FRAMEWORK<sup>2</sup>**

Focal Area Objectives	Expected FA Outcomes	Expected FA Outputs	Trust Fund	Grant Amount (\$)	Cofinancing (\$)
CCM-2	2.1 Appropriate policy, legal and regulatory frameworks adopted and enforced 2.2 Sustainable financing and delivery mechanisms established and operational 2.3 GHG emissions avoided	2.1 Energy efficiency policy and regulation in place 2.2 Investment mobilized 2.3 Energy savings achieved	GEFTF	5,776,484	38,439,000
<b>Total project costs</b>				5,776,484	38,439,000

**B. PROJECT FRAMEWORK**

**Project Objective:** To accelerate and expand the introduction of Energy Management Systems (EnMS), Industrial Energy Systems Optimization (ESO), and the Energy Management Standard ISO 50001 Series within the South African industrial (and selected commercial) context in order to realize increased investment in industrial energy efficiency (IEE) through the wide-scale adoption of the two methodologies and ISO 50001 under (i) enhanced institutional frameworks and regulatory environments, (ii) technical and implementation assistance to industry and (iii) multi-level engineer, technician and operator capacity building programmes.

Project Component	Grant Type	Expected Outcomes	Expected Outputs	Trust Fund	Grant Amount (\$)	Confirmed Cofinancing (\$)
<b>Component 1.0: Data</b>	TA	Strengthened energy planning	1.1 Energy consumption/performance	GEFTF	400,000	1,600,000

<sup>1</sup> Project ID number will be assigned by GEF Sec.

<sup>2</sup> Refer to the Focal Area Results Framework and /LDCF/SCCF Framework when completing Table A.

Project Component	Grant Type	Expected Outcomes	Expected Outputs	Trust Fund	Grant Amount (\$)	Confirmed Cofinancing (\$)
quality improvement to facilitate data rich IEE and energy management policy implementation		(and related energy and GHG emissions reduction target setting) through improved data and reporting on energy consumption and potential savings under EnMS and ESO	mapped with the savings potential determination, against potential penetration rate and implementation challenges of EnMS and ESO in line with ISO 50006 methodologies within selected industrial and commercial sectors  1.2 Country specific EnMS and ESO best practice technology and process benchmarks established in line with the National Energy Efficiency Strategy (NEES) and the National Energy Efficiency Action Plan (NEEAP)			
<b>Component 2.0:</b> Strengthening policy implementation and support frameworks for EnMS, ESO and Energy Management Standards	TA	Enhanced promotion of investment in IEE through strengthened policy and regulatory frameworks and support to increase the uptake of energy management standards	2.1 Targeted technical assistance and capacity building to enhance and implement IEE policies, incentives and regulatory frameworks supporting EnMS and ESO uptake and strengthening the coordination of associated activities across government agencies  2.2 Assistance to operationalize South African National Standard SANS/ISO 50001 Series with additional advisory support, and recommended actions for Government and Standards Bodies to promote and mainstream Energy Audit (ISO 50002); Conformity Assessment (ISO 50003); and Energy Baselines and Performance Indicators (ISO 50006)  2.3 Training courses with supporting tools for the ISO 50001 Series to assist in the introduction of Energy Audit (SISO 50002), Conformity Assessment (ISO 50003) and Energy Baselines and	GEFTF	750,000	4,250,000

Project Component	Grant Type	Expected Outcomes	Expected Outputs	Trust Fund	Grant Amount (\$)	Confirmed Cofinancing (\$)
			Performance Indicators (ISO 50006) as well as to promote increased Measurement & Verification and the uptake of SANS50010			
<b>Component 3.0:</b> Mainstreaming EnMS and ESO Training and Skills Development Programmes	TA	Expansion of the EnMS and ESO capacity building programme with the inclusion of new ESO topics and multi-level enterprise trainee courses under parallel NQF institutionalization and market capacitation enhances the capacity of the South African industrial sector to implement EnMS and ESO and achieve energy savings	3.1 Expanded engineer-level EnMS and ESO Industry Capacity Building courses developed and delivered, including new professionally recognized ESO topics, graduate mentorship and SME EnMS Implementation Guide resource packages and learning materials  3.2. EnMS and ESO Technician-Level Courses developed and delivered with supporting bridging courses for enterprise staff as well as development of Vocational EnMS and ESO Training Course Modules and supporting materials  3.3. Institutionalized and National Qualifications Framework (NQF) Compliant EnMS and ESO training course materials developed and provided to the commercial Training Providers combined with targeted capacity building and market development initiatives as well as assistance to establish a Green Industry Professional Association	GEFTF	1,950,000	10,500,000
<b>Component 4.0:</b> Investment promotion in IEE through EnMS and ESO demonstration, and financial mechanism and incentive access	TA	Access to finance increased with the energy and cost saving benefits of EnMS and ESO proven within the South African industrial context, with industry	4.1. EnMS and ESO demonstration programme of 150 individual enterprises (50 large, 100 SMEs) across multiple industrial and selected commercial sectors	GEFTF	1,576,484	1,079,000

Project Component	Grant Type	Expected Outcomes	Expected Outputs	Trust Fund	Grant Amount (\$)	Confirmed Cofinancing (\$)
support for industry and selected commercial sectors	INV	actively and progressively pursuing enhanced IEE	<p>4.2. Support to industrial enterprises through a financial proposal advice/match-making support mechanism/service and other assistance programmes to assist access to, and understanding of, IEE commercial sector financing and Government financial incentive programmes</p> <p>4.3 Targeted technical support to FIs/IFIs and Government providers of IEE finance to develop, enhance access and evolve funding mechanisms, incentives and financial packages/credit streams for industrial enterprises implementing EnMS and ESO measures</p>	n/a	0	16,000,000
<b>Component 5.0:</b> EnMS and ESO Awareness, Promotion, Service Demand Generation and Lessons Sharing	TA	Enterprise management (across the entire South African industrial sector and selected commercial sectors) is aware of the potential financial, economic and climate change mitigation benefits that adopting EnMS and ESO can yield	<p>5.1. Holistic Awareness and Communications Strategy to increase awareness and showcase the benefits of implementing EnMS and ESO methodologies</p> <p>5.2. Communication and awareness outreach activities to promote uptake of policy frameworks, standards, learning circles, financing opportunities, training and capacity building activities, and EnMS and ESO</p>	GEFTF	750,000	3,150,000
<b>Component 6.0:</b> Project monitoring and evaluation	TA	The GEF Project is fully monitored and evaluated under periodic implementation assessment of impact, based on the 'Theory of Change' methodological approach	6.1 Monitoring and evaluation (M&E) mechanism, in line with the Theory of Change approach and determined Key Performance Indicators, established with regular monitoring exercises conducted, and tracking tools prepared with periodic reporting	GEFTF	100,000	200,000

Project Component	Grant Type	Expected Outcomes	Expected Outputs	Trust Fund	Grant Amount (\$)	Confirmed Cofinancing (\$)
			6.2 Mid-term review and final project evaluations conducted, an evolving project 'Theory of Change' facilitated by M&E over the project's lifetime, with reviews, reports and post project completion impact assessment(s)			
Sub-total					5,526,484	36,779,000
Project management cost <sup>3</sup>					250,000	1,660,000
<b>Total project costs</b>					<b>5,776,484</b>	<b>38,439,000</b>

### C. SOURCES OF CONFIRMED COFINANCING FOR THE PROJECT BY SOURCE AND BY NAME

Please include letters confirming co-financing for the project with this form

Sources of Co-financing	Name of Co-financier (source)	Type of Cofinancing	Cofinancing Amount (\$)
GEF Agency	UNIDO	Cash	100,000
GEF Agency	UNIDO	In-Kind	210,000
National Government	Department of Trade and Industry (dti)/ National Cleaner Production Centre of South Africa (NCPC-SA)	In-Kind	10,000,000
National Government	Department of Trade and Industry (dti) & the Manufacturing Competitiveness Enhancement Programme (MCEP)	Cash	17,600,000
National Government	Department of Energy (DoE)	In-Kind	1,000,000
National Government	Department of Environmental Affairs (DEA)	In-Kind	50,000
National Government	Council for Scientific and Industrial Research (CSIR)	In-Kind	3,500,000
National Government	South African National Energy Development Institute (SANEDI)	Cash	900,000
National Government	SANEDI	In-kind	1,000,000
Bilateral Aid-Agency	Swiss State Secretariat for Economic Affairs (SECO)	Cash	2,079,000
Private Sector	SASFIN Bank	Cash	2,000,000
<b>Total Co-financing</b>			<b>38,439,000</b>

### D. TRUST FUND RESOURCES REQUESTED BY AGENCY, FOCAL AREA AND COUNTRY<sup>1</sup>

GEF Agency	Type of Trust Fund	Focal Area	Country Name/ Global	(in \$)		
				Grant Amount (a)	Agency Fee (b) <sup>2</sup>	Total c=a+b
<b>Total Grant Resources</b>						

<sup>1</sup> In case of a single focal area, single country, single GEF Agency project, and single trust fund project, no need to provide information for this table. PMC amount from Table B should be included proportionately to the focal area amount in this table.

<sup>2</sup> Indicate fees related to this project.

### F. CONSULTANTS WORKING FOR TECHNICAL ASSISTANCE COMPONENTS

Component	GEF Amount (\$)	Co-financing (\$)	Project Total (\$)
Local consultants	1,201,200	1,000,000	2,201,200
International consultants	810,400	500,000	1,310,400

<sup>3</sup> Same as footnote #3.

## **G. DOES THE PROJECT INCLUDE A “NON-GRANT” INSTRUMENT? Y/N - NO**

(If non-grant instruments are used, provide in Annex D an indicative calendar of expected reflows to your Agency and to the GEF/LDCF/SCCF/NPIF Trust Fund).

### **Part II: Project Justification**

#### **A. DESCRIBE ANY CHANGES IN ALIGNMENT WITH THE PROJECT DESIGN OF THE ORIGINAL PIF<sup>4</sup>**

The overall project design, objectives, expected outcomes and outputs are predominantly aligned with the original PIF with some redesigning of components following findings discovered during the project design phase and subsequent updating to reflect these changes in the baseline. Some the components and their contained objectives and outputs have also been slightly reworded to increase clarity. One major revision is the increased amount of co-financing that is now available to the project. The project now has an additional US\$ 10,829,000 of confirmed co-financing than was originally proposed in the PIF. Whilst the GEF Trust Fund distribution remains the same across all components, the co-financing amounts have increased for Components 2.0, 3.0, 4.0, 5.0 as well as for project management costs. Changes from the original PIF structure are described in detail below.

Component 1.0 – The title of the component has changed to reflect a call from Government for improved data quality to be made available for the purpose of ‘data rich policy and regulatory formulation’. The Outcome remains the same but has been reworded for increased clarity. Outputs remain generally the same as in the PIF, with Output 1.1 reflecting a slight sharpening of the industrial sector mapping functions due to the DoE beginning initial work in this area and the addition of the application of ISO50006 (Energy Baseline and Performance Indicators) methodologies. Output 1.2 remains the same but has been reworded for increased clarity and tied to wider Government policy and planning tools, i.e. the National Energy Efficiency Strategy (NEES) and the National Energy Efficiency Action Plan (NEEAP).

Component 2.0 – The title of this component has been changed to reflect how the baseline has evolved. Firstly, the DoE has begun the process of developing and publishing the Energy Management Planning (EnMn Planning) Regulation. However, the need for both strengthened/enhanced policy and regulatory implementation and inter-departmental coordination remains a core need in South Africa. As such, Output 2.1 has been modified to reflect these changes, but with technical assistance and capacity building to strengthen IEE policy and regulatory implementation remaining the core actions of the component, as described in the PIF. Additional activities have been added to enhance inter-department coordination of IEE policy under Output 2.2. The major change to Component 2.0 is the inclusion of ISO 50001 Series and SANS 50010 activities under a re-tasked Output 2.2 and the new Output 2.3. This addition was deemed necessary due to calls from both Government and non-government stakeholders as well as being encouraged by positive developments in regard to the ISO 50001 Energy Management Standard. Component 2.0 also has an increase of US\$ 1,250,000 in co-financing, which reflects firstly, the expanded efforts of the DoE and the **dti** towards enhancing and implementing IEE policies and the coordination of associated activities across government agencies; and secondly the additional efforts from the Government and associated standards institutions to assist the operationalization of the SANS/ISO 50001 Series.

Component 3.0 – The title of this component has been changed for increased clarity but the component itself and its contained activities remain in line with the original PIF, with some reorganization of activities between outputs. The main change to Component 3.0 comes under Output 3.3, where the baseline project has changed due to the initial development of the National Qualifications Framework (NQF) Occupational Qualifications under the existing ‘*Industrial Energy Efficiency Improvement in South Africa Project*’ (hereon referred to as the ‘SA IEE Project’). Output 3.3 will now therefore focus on operationalizing and promoting the qualifications and supporting the shift to commercial and ultimately sustainable training provision for EnMS and ESO in South Africa. In addition, Output 3.3 also includes supporting the establishment of a professional body for energy

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<sup>4</sup> For questions A.1 –A.7 in Part II, if there are no changes since PIF and if not specifically requested in the review sheet at PIF stage, then no need to respond, please enter “NA” after the respective question

efficiency practitioners to support the recognition of this profession and associated skillset. Component 3.0 also has an increase of US\$ 3,150,000 in co-financing which reflects expansion of the courses to be developed by the GEF Project and their respective institutionalization into the relevant South African education structures such as the NQF.

Component 4.0 – The title of this component has been changed firstly to be more in line with the Government request to move from EnMS and ESO piloting to ‘demonstration’; and secondly, to clearly reflect the technical assistance that will be provided to Government financial mechanisms and commercial banks in regard to assessing EnMS and ESO IEE investments proposals. This increase in detail is also reflected by the expanded Output 4.2, and the additional Output 4.3. Component 4.0 also has an increase of US\$ 6,829,000 which reflects an increased amount of co-financing made available by the MCEP fund and commercial banks for the promotion of EnMS and ESO IEE investment. Whilst the number of demonstration projects (150) remains the same, the level of potential investment in EnMS and ESO measures has increased.

Component 5.0 – The title and content remains the same as in the original PIF but with an increase of US\$150,000 reflecting increased commitment from Government Departments, DoE and the **dti** and their respective agencies SANEDI and NCPC-SA’s from firmly embedding the GEF Project’s EnMS and ESO awareness and outreach programme within wider Government national promotion and awareness raising campaigns for wider IEE.

Component 6.0 – The title of this component has been changed for clarity, however the component content remains the same as in the original PIF.

Project Management Costs – an increase of US\$ 110,000 is included to reflect the increased management costs of expanded activities under Components 2.0, 3.0 and 4.0.

#### **A.1 National strategies and plans or reports and assessments under relevant conventions, if applicable, i.e. NAPAS, NBSAPs, national communications, TNAs, NCSA, NIPs, PRSPs, NPFE, Biennial Update Reports, etc.**

The South African government continues to prioritize industrial energy efficiency (IEE) and greenhouse gas (GHG) emissions mitigation through key strategies, policies and legislation on energy, climate change mitigation, industrial competitiveness and economic development. However, a number of barriers prevent the realization of many strategies and plans that remain incomplete and often hinder the success of policy and legislative measures to achieve improved IEE. The GEF Project remains highly consistent with these national priorities through the technical assistance and policy formulation support that it intends to provide to overcome these barriers.

As described in the PIF, this GEF Project builds on the work of the UNIDO implemented SA IEE Project. The SA IEE Project introduced and piloted the IEE concepts and methodologies of (i) Energy Management Systems (EnMS); (ii) the new international Energy Management Standard ISO 50001; and (iii) Industrial Energy Systems Optimization (ESO). As in the SA IEE Project, the GEF Project will continue to align with the following national strategies, plans, reports and assessments (each described further in the section below):

- National Energy Efficiency Strategy (NEES)
- National Climate Change Response Strategy (NCCRS)
- Acts: ‘National Energy Act’ No. 34 of 2008
- National Plans:
  - Integrated Resource Plan for Electricity 2010-2030 (IRP2)
  - Industrial Policy Action Plan (IPAP) 2014/15 - 2016/17 Integrated Energy Plan (IEP) (not yet promulgated)
- Technology Needs Assessment (TNA)
- ‘2<sup>nd</sup> National Communication’ to the United Nations Framework Convention on Climate Change (UNFCCC)

- South Africa's pledge to the Copenhagen Accord
- Energy Efficient Leadership Network.

The **National Energy Efficiency Strategy (NEES)** takes a holistic and long-term view of the contribution that all sectors can make in the next 20 years under a series of Sector Action Plan Programmes, which include industry and manufacturing. In 2012, the SA IEE Project facilitated the Second Revision of the NEES which set the goal of a 15% energy intensity reduction by the end of 2015 for the industrial and commercial sectors. During the review of the NEES, an EE Policy Mapping Study provided a comprehensive policy and legislative context for the development of the South African **National Energy Efficiency Action Plan (NEEAP)**. Key deliverables of the NEEAP until 2015 are the finalization, establishment and implementation of the EE monitoring system, energy management regulations and plans, measurement and verification of the past energy savings and ensuring functional EE incentive schemes. The **Energy Efficiency Accord** (renamed '**Energy Efficiency Leadership Network**') is a voluntary commitment by large businesses in South Africa to implement the NEES. Currently there are over 50 signatories from enterprises in the mining, industrial, petrochemicals, commercial and financial sectors. Based on the work of the SA IEE Project, the GEF Project will continue to support enterprises in their IEE efforts as well as assisting the Government to establish IEE monitoring systems and support the strengthening of energy management regulations and plans, government monitoring and verification (M&V) programmes and IEE incentive schemes. The GEF Project will also provide data and assistance to periodically review the NEES and NEEAP.

The Government has recently deployed a range of complementary and integrated measures to grow the economy and create jobs. The latest **Industrial Policy Action Plan (IPAP) 2014/15 - 2016/17** is one of the key pillars of this broader approach. It builds on the National Industrial Policy Framework (NIPF) and represents the sixth annual iteration of the first IPAP launched in the 2007/08 financial year.

The South African Government's **National Climate Change Response Strategy (NCCRS)** was published in 2011. The NCCRS policy paper provides a clear roadmap of how the nation must respond to the global challenge of climate change. The NCCRS remains the benchmark against which the efficacy of South Africa's climate change mitigation actions will be measured, as defined by the initial National Greenhouse Gas Emissions Trajectory Range, commonly known as South Africa's Peak, Plateau and Decline (PPD) GHG emission trajectory. The GEF Project will provide data and assistance to periodically review the NCCRS and ensure the inclusion of IEE initiatives.

The **Integrated Resource Plan for Electricity 2010-2030 (IRP)** is a 'living plan' for energy and lays out the intended generation capacity for new build fleet and includes minimal consideration of EE. The current assumptions in the IRP, with respect to EE measures, are conservative. Only existing and planned programmes were considered, and new options to increase EE further were not taken into account as historic EE trends appear to have been used to guide planning.

The (not yet promulgated) **Integrated Energy Plan 2050 (IEP 2050)** is still under development by the Department of Energy (DoE). Integrated energy planning seeks to consider all the key elements of the energy value-chain at a national level including demand for energy services. The IEP seeks to quantify and provide feedback on the extent to which policy objectives outside the sector may impact the attainment of energy sector imperatives and vice versa. In line with the GEF Project, one of the IEP's eight objectives is to promote EE and minimize GHG emissions resulting from energy use.

South Africa's 2007 **Technology Needs Assessment (TNA)** identifies aspects of industry and mining as key areas for attention where significant reductions in national GHG emissions can be achieved through initiatives such as, improved data management and incentives for EE. The GEF Project will assist Government in strengthening and collecting information on industrial energy use and IEE initiatives.

South Africa's **2nd National Communication** to the UNFCCC also highlights the role of IEE as one of the four major areas with the largest GHG emissions mitigation potential for South Africa. It also outlines the intention of Government to scale up and reinforce IEE and electricity demand-side management initiatives and interventions through available regulatory instruments and other

appropriate mechanisms that would be made mandatory. The GEF Project specifically targets existing legislation for strengthening and targeting IEE in order to avoid policy and legislative overburdening both Government and industry actors.

While not strictly a policy or regulatory instrument, under ‘**South Africa’s Copenhagen Accord Pledge**’ the Government stated that “South Africa reiterates that it will take nationally appropriate mitigation action to enable a 34% deviation below the ‘business as usual’ emissions growth trajectory by 2020, and a 42% deviation below the ‘business as usual’ trajectory by 2025.” The Government also stated, “the extent to which this action will be implemented depends on the provision of financial resources, the transfer of technology, and capacity building support by developed countries.” The GEF Project will build the capacity of local beneficiaries and, through the introduction of new ESO standards, encourages the transfer of new technologies.

## **A.2 GEF focal area and/or fund(s) strategies, eligibility criteria and priorities**

The GEF Project supports the GEF-5 Climate Change Mitigation (CCM) focal area by addressing key information, capacity and policy barriers for sustainable IEE in South Africa. The GEF Project directly contributes to, and is fully aligned with, the CCM Strategic Objective 2 – ‘*Promote market transformation for EE in industry and the building sector*’. The GEF Project aims to make a significant contribution to the wide-scale stimulation and strengthening of the South African market for IEE products and services, under the EnMS and ESO methodologies.

## **A.3 The GEF Agency’s comparative advantage**

The GEF Project remains consistent with the GEF’s acknowledged comparative advantage for UNIDO for the development and implementation of IEE projects. With its mandate to promote Inclusive and Sustainable Industrial Development (ISID), UNIDO is one of the most relevant players to assist industries of both developing countries and emerging economy countries by providing policy-making technical assistance, institutional capacity building and market transformation support to foster the implementation of improved EE. UNIDO has long-standing industry-wide experience with the technical, policy and financing aspects of efficiency improvement in manufacturing and process industries as well as within the industrial SME sector.

The GEF Project focuses on promoting IEE through further accelerating and mainstreaming the adoption of EnMS and ESO with South African industry. UNIDO has been involved with the ISO 50001 Energy Management System Standard from its initial development, and was one of the first organizations to package and promote the two concepts of EnMS and ESO within industry. Therefore, UNIDO brings to the GEF Project its leading global experience and extensive knowledge assets (i.e. training programs, tools, methodologies, platforms) for promoting and supporting EnMS and standards implementation, industrial ESO, qualification programmes for EnMS and ESO practitioners, certification schemes for ISO 50001 auditors, and other IEE policies and programmes. In addition, UNIDO presently has sixteen ongoing EnMS/ESO projects worldwide and a further nine in various stages of development with these projects being funded by the GEF as well as other donors. This global network of EnMS/ESO projects allows for considerable integration of approaches, lesson sharing, and a rich base for developing country expert exchange.

The SA IEE Project was the first large-scale EnMS/ESO project of UNIDO’s portfolio and, as such, it developed many of the EnMS and ESO concepts and approaches. This also resulted in the project and the NCPC-SA and UNIDO building up over the past five years a good reputation within South African industry for providing beneficial and high quality training and technical support. The SA IEE Project has also laid firm groundwork for good cooperation with Government agencies in developing policies and institutional frameworks to support IEE as well as strong partnership with various industrial and enterprise associations, and other existing programmes. In addition, UNIDO is currently implementing a number of other projects in South Africa including other GEF funded projects that present significant synergy opportunities (see Section A.7 for how the GEF Project will coordinate with other UNIDO implemented GEF projects).

## A.4 The baseline project and the problem that it seeks to address

### A.4.1 Context for energy management and energy efficiency in South Africa

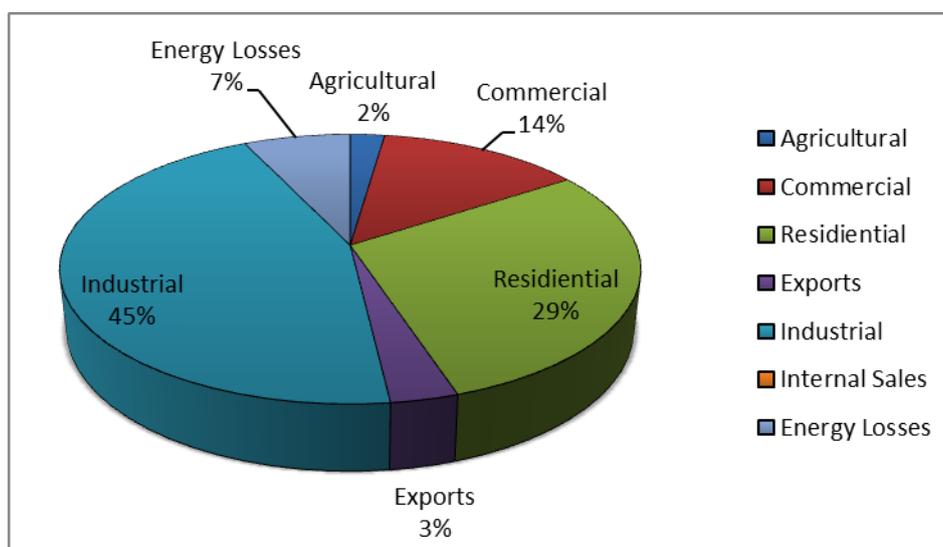
#### *National Economic Outlook*

South Africa is a middle-income ‘emerging economy’ country with a GDP of approximately US\$ 350.63 billion in 2014, which is a reported fall in GDP relative to US\$ 403.89 billion in 2012 (World Bank, 2014). South Africa is in the midst of an energy constraint where demand is continuously growing against a constrained supply. Traditionally dominated by the mining, manufacturing, petrochemicals and agriculture sectors, the economy is experiencing a slight deindustrialization with GDP growth being dragged down by industrial tensions and delays in fixing infrastructure gaps, including electricity constraints (IMF, 2014). Current unemployment, at 25% of the labour force (IMF, 2014), is compounded by falling industrial competitiveness against lower labour cost countries. Therefore, there is a pressing need for the national economy to diversify and expand to create jobs, with this being a top priority for Government. Given this situation, the South African Government recognizes the important role that IEE plays in lowering production costs, boosting industrial competitiveness, and contributing to the Government’s objective of employment creation and protection.

#### *Energy Outlook*

South Africa can be classified as a relatively energy intensive economy ranking 7th in the world in 2013 in terms of economic energy intensity (Enerdata, 2014). The economy is still heavily structured around, and dominated by energy intensive and inefficient large-scale operations such as mining and minerals processing industries. According to the DoE, South Africa’s total primary energy production/supply in 2012 was 5,667PJ (Department of Energy South Africa, 2014), down from 6,239PJ in 2009 (a 9% decrease), while total primary energy consumption decreased from 3,275PJ in 2009 to 2,657PJ in 2012 (a 18.9% decrease). This level of energy supply and consumption ranks South Africa within the top 20 for both parameters in the world. Installed generation capacity presently stands at 41,000 MW made up mostly from by coal-fired power plants. In 2015, due to maintenance within the generating stock and the transmission system, only 30,000 MW was presently available. Energy demand is expected to continue to grow in the face of a growing population and economy unless significant interventions are implemented to greatly increase the level of EE and lower demand. The present policy scenarios show an increase of between 2.6-2.9% in GDP, which projects a Total Final Consumption of Energy in South Africa to reach approximately 4,270PJ (102mtoe) (IEA, 2014).

*Figure One: South African Electricity Use per Sector 2012*



The main energy consumer in South Africa is still the industrial sector, accounting for 45% of all electricity consumed (see Figure One). Within the industrial sector the largest energy and power

consumers are: non-ferrous metals, mining and quarrying, and manufacturing e.g. car production (see Table One).

**Table One: Industrial Sector Energy Balances and Power Demand for 2012**

Subsector	Energy (GWh)	Max Peak Demand (MW)
Chemicals	16,629	2,391
Liquid Fuels	19,480	2,801
Iron and Steel	7,408	961
Non-Ferrous Metals	38,622	5,600
Manufacturing	21,499	3,495
Gold Mining	13,353	1,726
Coal Mining	3,699	564
Platinum Mining	12,004	1,552
Rest of Mining	4,569	598
<b>TOTAL</b>	<b>137,263</b>	<b>19,688</b>

As a result of South Africa's reliance on coal for power generation coupled with the energy intensive nature of its economy, national emissions of CO<sub>2eq</sub> from the consumption of fossil fuels stood at 443.58 million metric tons in 2012, ranking it 12th in the world for CO<sub>2eq</sub> emissions from fossil fuels (source: EIA). As can be expected from the dominance of the industrial sector in terms of total national energy consumption, total GHG CO<sub>2eq</sub> emissions from the industrial sector are a large portion of South Africa's total national GHG CO<sub>2eq</sub> emissions.

#### ***South Africa's Power Constraint – 2008/09 and 2015***

In December 2007, South Africa entered into a period of acute energy challenges manifested within the electricity sector where electricity supply was no longer able to meet peak demand. The situation became so serious that Eskom had to instigate to series of load shedding measures in early 2008 to keep vital sectors of the nation's infrastructure running. This load-shedding and the threats of increased blackouts presented a risk to the entire economy, also putting social development at risk. In August 2008, the National Energy Regulator of South Africa announced that the energy challenges had already cost the economy 50 Billion Rand. This obviously had a negative effect on social factors such as employment, as many large energy intensive employers announced major job layoffs.

As a result of the national energy challenge, the Government and Eskom initiated and strengthened a number of urgent programmes to address the situation. On the supply-side, an extensive programme to upgrade, diversify and expand the country's electricity infrastructure was been initiated including the building of 9.8 GW of new coal-based generation capacity. On the demand-side, a series of electricity demand reduction initiatives were put in place. Under this demand-reduction drive, the Government, in partnership various stakeholders and business associations, developed a number of programmes aimed to improve EE within the industrial sector.

While the nation hoped this episode was behind it, at the end of 2014 a number of factors converged to push the country back into a period of power shortages. These factors included delays to bringing new generating capacity online, a falling level of thermal efficiency within the aging power station fleet and the instigation of much needed maintenance of these power stations. These factors, combined with the fact that consumers still use electricity as if it is not a scarce resource, are resulting in the electrical system becoming extremely constrained. While not yet as severe as in 2008/09, major load shedding started again in late 2014 and continues to be implemented on a rotating basis throughout the country and between districts as the reserve margin drops below zero, sometimes up to 4.0 GW below during Phase III load shedding. This practice will intensify as generating units are taken offline for maintenance, repairs or re-fuelling (in the case of nuclear units) as well as on unplanned occasions due to breakdowns. This situation is predicted by Eskom to continue for the next four to five years while Eskom commissions new generating capacity. These power shortages are threatening to impose a major burden on the economy and are cited as one of the main reasons for growth forecasts of little more than two percent in 2015. South Africa's power constraint therefore

continues to be cited as one of the most critical structural impediments to national growth. Therefore, there is an urgent and critical need to reduce industrial power demand thereby increasing the national grid's reserve margin.

To address the new power constraint, the DoE under the 'Economic Sectors, Employment and Infrastructure Development Ministers Cluster', developed and released a Five Point Plan in mid-December 2014 which details the actions to be taken over the next three years. The key interventions prescribed under the plan are: (i) Improvement of strategic generating maintenance capacity and operational efficiency of Eskom's generating capacity as well as developing detailed financing and cash flow planning for Eskom to ensure its sustainability; (ii) Extending the use of co-generation, both in terms of existing power supply to the national grid, as well as encouraging further investment in an additional 1,000 MW of new capacity; (iii) Gas sourcing to power 500-2,000 MW of new-build gas powered generation capacity; (iv) The development of 2,400 MW of new coal-based power generation capacity by Independent Power Producers (IPPs); and (v) The promotion of Demand-Side Management (DSM) within energy intensive users to explore further efficiency improvement opportunities (with the objective of realizing a 500MW reduction in demand).

As the industrial sector remains the largest energy-consuming sector, the role of increased IEE in assisting the Government to reduce national power demand cannot be overstated. As a reflection of this potential, in November 2014 Eskom again called on major industrial users to reduce consumption by a further 10 percent in addition to 10 percent requested the previous year. EnMS and ESO have been proven to deliver significant energy savings in the South Africa industrial environment (e.g. the EnMS established at Toyota-SA, with assistance from the SA IEE Project, has resulted in an approximate 35 percent reduction in the electricity input required per vehicle produced). Therefore, IEE improvement will be one of the tools that the Government will use to address the power constraint and meet the challenge of providing long-term energy security for the country.

#### **A.4.2 Industrial Energy Efficiency Situation and Baseline Project**

Industrial energy performance has improved over the past years to some degree, especially in larger enterprises, as a result of the 2008/09 national power constraint and ensuing increases in energy and electricity prices, new legislative measures, financial incentive schemes and project initiatives. However, Government technical capacity for IEE policy-making and implementation, and industry's ability to take on new EE methodologies remains significantly constrained, with this being particularly pressing within the SME sector.

##### ***Legal Framework for Industrial Energy Efficiency***

The South African 'National Energy Act' No. 34 of 2008, signed by the President of South Africa on 17 November 2008, is the legal instrument by which the supply and consumption of energy is governed in South Africa. The Act aims to ensure that diverse energy resources are available, in sustainable quantities and affordable prices, to the South African economy in support of economic growth and poverty alleviation, taking into account environmental management requirements. The Act provides the DoE with the legal mandate and obligation, among other conditions, to: collect, collate and analyze energy data and information, and develop a gazetted 'Integrated Energy Plan'. This plan is reviewed on an annual basis and takes into account security of supply, universal access to energy, international commitments, the environment and the contribution of energy supply to economic development.

The Act also has the objective of facilitating the effective management of energy demand and its conservation – including EE where industry is concerned. While the Act grants considerable powers to the DoE (and hence the Government) to develop EE regulations and enforce them, the Act itself does not contain the necessary follow-up policies, secondary legislation or regulations to force, promote or incentivize changes in behaviour within industry or the wider economy. Many of these follow-up measures have yet to be developed or effectively enforced, and therefore, considerable scope exists for initiatives to assist the Government in developing the tools that will foster greater achievement of policy and regulatory objectives

### ***Institutional Framework for Industrial Energy Efficiency***

The energy sector, and South African energy policy, is overseen and coordinated by DoE in accordance with the 2008 National Energy Act. The DoE's role is supplemented by the **dti**, as the issue of industrial energy supply is central to the national economy, while at the same time industrial energy consumption is central to national energy consumption and policy, given the sector's level of energy demand. The **dti** is also the entry point for a number of the existing financial incentive schemes that intended to promote increased IEE/reduced energy intensity.

Both the DoE and the **dti** have under their responsibility/control institutions and programmes that are responsible for promoting increased EE both in regard to industry and the wider economy. For the DoE, this is SANEDI (as described under the 2008 National Energy Act); while for the **dti** it is the 'South African National Cleaner Production Centre (NCPC-SA)', which focuses specifically on the industrial aspects of EE. Both Ministries and their respective institutions/centres are committed to work together to form a strong base where the different aspects of industrial and economy-wide EE improvement can be properly analyzed, packaged and addressed.

Regarding the institutional frameworks and linkages concerning the energy sector, industrial energy consumption and climate change, these are set out under the South African National Climate Change Response Strategy (NCCRS) under the mandate of the Department of Environmental Affairs (DEA). While the DEA is the focal point and lead ministry for the NCCRS, the actual operational aspects of the strategy have been delegated to the responsible line ministries (e.g. the DoE has the responsibility to operationalize, and provide reporting data for, the parts of the NCCRS that are related to energy production and consumption). Again many of the follow-up mechanisms and operational tools have yet to be developed and deployed and therefore considerable scope exists for initiatives to assist the Government in developing measures that will improve inter-department coordination and the development of multi-objective tools with which to jointly approach industry.

### ***Energy Management Plans***

The DoE is currently publishing regulations for mandatory provision of 'Energy Management Plan' (EnMn Plan) that will require all enterprises with a significant level of energy consumption to develop and submit an energy management plan for their enterprise, with this plan containing self-set energy intensity reduction targets. The DoE will review these energy management plans and their contained targets, and decides whether or not to approve them. The support packages to assist industry to fulfil the EnMn Plan requirements have yet to be developed and therefore initiatives are needed to ensure that the tools fielded under the regulatory call do not overburden industry and that they are capable of fulfilling different energy/climate data reporting requirements.

### ***National Climate Change Response Policy***

The DEA has developed the National Climate Change Response Policy (NCCRP, 2011) that includes recommendations on mitigation: a commitment to reduce national GHG emissions to "make a fair contribution to the global effort to stabilize GHG concentrations a level that avoids dangerous anthropogenic interference with the climate system within a timeframe that enables economic, social and environmental development to proceed in a sustainable manner". The NCCRP will also introduce the following initiatives:

- Carbon Tax: (expected to be effective from 01 Jan 2016) on direct emissions, with a potential additional impact should the national supplier, Eskom 'pass through' the cost of the tax on to their customers.
- 'Desired Emission Reduction Outcomes (DEROs)', effective sectoral GHG emission limit caps.

Both tax (Treasury) and the prospect of sectoral and company-level DERO's will likely have a direct impact on energy consumption and hence increased appetite for EE improvement.

Furthermore, rising energy costs have impacted the private sector's appetite for EE programmes. The National Energy Regulator of South Africa (NERSA) approved a nominal Eskom power tariff

increase of 25.8% from April 2011, an increase of 16% from April 2012 and an increase of 8% per annum over five years from April 2013. In August 2014, however, NERSA stated that a 12.6% tariff hike had been approved, with this significantly exceeding expectation.

Without compromising efforts to ensure that South Africa meets its global commitments to carbon mitigation strategies, great care must be taken not to produce and implement 'blanket' environmental legislation without properly designed phasing-in mechanisms for vulnerable industrial sectors. In the absence of such mechanisms, onerous compliance requirements can easily lead to further factory closures, job losses and ultimately higher levels of poverty, thereby running in direct opposition to the Government's top priority of job creation. As such, the proposed Carbon Tax (intended to positively strengthen climate change mitigation measures) could turn out to be a 'tipping point' for South African industry if it is implemented without due regard to energy intensive industries and industrial SMEs. In this context, there is an important need to begin developing a systematic set of approaches that can provide a reasonable degree of transitional financial impact mitigation measures for vulnerable industries under any Carbon Tax regime, while at the same time continuing to promote and scale-up IEE interventions.

### ***Private Sector Initiatives***

Voluntary efforts have also begun to shape the IEE market in South Africa. The 'Energy Efficiency Accord' was a voluntary commitment by large businesses in South Africa to implement the National Energy Efficiency Strategy, first initiated in 2005. More recently, the Minister of Energy negotiated a revised and updated Accord based on the lessons learnt, with this revised Accord signed in December 2011 during COP17 in Durban. The Accord was also renamed to become the 'Energy Efficiency Leadership Network' (EELN). The EELN presently has 55 signatories comprising a number of South Africa's largest companies, the DoE and eight key business associations that help mobilize their members towards increasing their EE. The company signatories range from enterprises in the mining, industrial, and petrochemicals sectors to the commercial and financial sectors; and include the top energy users in the country (i.e. Eskom, Sasol, BHP Billiton, Anglo American, AngloGold Ashanti, Anglo Platinum, Xstrata, ArcelorMittal and Exxaro). Private sector initiatives, such as the EELN, require technical assistance programmes to provide their members with the support necessary to put in place IEE measures and help achieve their own energy, GHG and cost saving goals as well as the goals of the wider initiative.

### ***Incentives, Investments and Financing for Industrial Energy Efficiency***

There are a growing number of financial incentive schemes in South Africa that either aim solely to promote improved EE or have components that aim to do so. These schemes consist of support programmes directly managed by Government Ministries and those that are managed by parastatals, such as Eskom or by Government-appointed and owned institutions such as the Industrial Development Corporation (IDC). The main funds available for IEE are:

- **Manufacturing Competitiveness Enhancement Programme (MCEP)** is managed by the **dti** and is one of the key action programmes of the Industrial Policy Action Plan (IPAP) 2012/13-2014/15. The MCEP was launched in June 2012 and aims to provide enhanced manufacturing support, including Green Technology and Resource Efficiency Improvement grants (for those wishing to increase EE) in order to sustain employment and maximize value-addition in the short to medium term. MCEP comprises two sub-programmes: the Production Incentive (PI) programme and the Industrial Financing Loan Facilities programme, which are managed by the **dti** and the Industrial Development Corporation respectively. The PI is the largest component of the MCEP (80% by Rand value).
- **12I Tax Incentive** is managed by the **dti** and offers support for both capital investment and training to support greenfield investments (i.e. new industrial projects that use only new and unused manufacturing assets), as well as brownfield investments (i.e. expansions or upgrades of existing industrial projects). A key requirement is that projects should upgrade an industry within South Africa via an innovative process, cleaner production technology or improved EE.
- **12L Tax Incentive** is managed by the DoE and provides tax reductions incentives for businesses to claim if they can show measurable and verifiable savings in all energy forms

(not just electricity and as such 12L includes all EE projects that reduce energy use). The tax relief is a Rand 45 Cents deduction on taxable income per kilowatt-hour of energy saved – subject to all the conditions in the 12L regulations being met. The SANS 50010 Measurement and Verification of Energy Savings Standard is the compulsory mechanism to verify energy savings under the 12L.

- **Green Energy Efficiency Fund (GEEF)** is a recently launched EE fund that is managed by the IDC. The GEEF is a partnership between the IDC and the German Development Bank (KfW) under the ‘South African-German Financial Cooperation Framework’ and is intended to support and promote EE and renewable energy investments. The Fund established a Rand 500 million loan facility for EE and small-scale renewable energy projects. Loans from a minimum of Rand 1.0 million to a maximum of Rand 50.0 million are available at prime interest rate of less than 2.0%. The loan terms are up to maximum of 15 years, depending on the payback period of the investment.
- **Eskom’s Integrated Demand Management Programme** has designed various funding models such as rebates and performance offers for electrical EE improvements. However, Eskom’s IDM incentives are currently on hold after the National Energy Regulator determined that the programmes should not be funded through the electricity tariffs. There is no present indication when the IDM incentives may become available again. However, the GEF Project would aim to assist industry to participate in Eskom’s IDM programme, when it becomes available again.
- **Private sector finance**, or more specifically tailored financial packages for IEE investments, is currently under supplied in South Africa Industry and commercial enterprise sectors. The International Financial Corporation (IFC) and KfW currently operate on-lending finance facilities to local banks and partners for IEE projects. IFC’s Climate Change Investment Program in Africa (CIPA), in partnership with the Swiss State Secretariat for Economic Affairs (SECO), is assisting selected South African banks to develop innovative financial products for the sustainable energy market through providing on-lending credit lines and an advisory services partnership. SASFIN Bank to date has been the most active bank under the programme with a US\$ 10 million credit line being provided by the IFC to SASFIN Bank in 2014, with the products being aimed at EE investments within SMEs.

The presence of these funds, especially the MCEP, completely negates the need for the GEF Project to establish its own dedicated financing mechanism as this would duplicate (and be dwarfed by) these existing, and much larger, national and international IEE financing mechanisms. Despite the existence of these funds, to date the effectiveness of these mechanisms to mobilize finance and provide financial incentives for EnMS and ESO projects has been mixed. During the PPG phase a number of stakeholder interviews confirmed the apparent difficulty for EnMS and ESO projects to access these funds due to a number of misalignments hindering access as well as the presence of a large surplus of available credit from these initiatives. Therefore, to assist in resource mobilization and provision of incentives under the GEF Project’s demonstration activities (and through their wide-scale replication) the GEF Project will work to ensure alignment between these different mechanisms and the development of qualifying and bankable EnMS and ESO projects. The GEF Project will support the respective funds/mechanisms by feeding them with candidate project enterprises and providing targeted capacity building to strengthen and expand their internal evaluation focus and capabilities in regard to EnMS and ESO IEE project proposals, thereby creating a mutually beneficial relationship.

For additional details of South African EE policy and incentives, see Annex G.

#### **A.4.2.2 Industrial energy efficiency projects in South Africa (Baseline Project)**

The South African industrial sector has received little in the way of external donor bi-lateral or multi-lateral technical assistance (including from the GEF) until the SA IEE Project began its implementation in 2010. The SA IEE Project forms the baseline framework as detailed below.

### ***South Africa Industrial Energy Efficiency Improvement Project (SA IEE Project)***

The GEF Project will build on the work of the SA IEE Project, which is currently being implemented by UNIDO and funded by the South African Government (UK Department for International Development (DFID) and Swiss State Secretariat for Economic Affairs (SECO). The South African National Cleaner Production Centre (NCPC-SA) is the national host of the project with the **dti** and the DoE being the national implementation partner. The project began implementation in April 2010 and is *scheduled for completion at the end of September 2015*. The overall objective/development goal of SA IEE Project was to increase IEE in South Africa in order to contribute to national efforts to improve energy security and electricity supply continuity while seeking that GDP growth is not constrained by energy shortages and rising prices. The strategy for achieving this goal was the introduction, piloting and promotion of EnMS and ESO as well as the main ISO50001 Energy Management Standard. Thus, the SA IEE Project aimed to contribute to the sustainable transformation of energy usage practices in South African industry.

The SA IEE Project has four main components where Component One focused on IEE policy development; Component Two focused on energy management standards (including supporting the Government and relevant standards bodies/institutions with the introduction of the main Energy Management Standard ISO 50001); Component Three focused on training and developing a series of EnMS and ESO training packages offered to industry and the industrial consulting sector. Under the project's fourth component a programme of EnMS and ESO industrial piloting (including an ESO-based SME Energy Audit programme) was established with this being combined with an awareness raising and project communications programme, involving a process of initial sector awareness creation and a company outreach and recruitment initiative. Originally the SA IEE Project focused on five highly energy intensive industry sectors that had significant energy consumption reduction potentials: agro-processing; chemicals and liquid fuels; metals processing and engineering; automobile manufacturing; and mining and minerals. However, the SA IEE Project broadened its reach to include other industrial sub-sectors (clothing and textiles, food processing, glass, paper and pulp, construction materials (including cement) and printing sub-sector), as well as commercial and even public buildings/institutions sub-sectors where they presented significant energy consumption.

**Results of the SA IEE SA Project** - At the time of developing the RCE document for the GEF Project, the SA IEE Project was still under implementation, with completion scheduled for December 2015. The results of the project to date are as follows:

- Under the SA IEE Project's policy establishment component, the project facilitated the Government to develop the Second Revision of the South African National Energy Efficiency Strategy (NEES). However, many of the other policy and regulatory objectives of the project remain unfilled due to a series of issues relating to interdepartmental coordination, and the complexity of establishing new policy and regulatory measures (as well as industry supporting tools) under multi-stakeholder approaches.
- Under the SA IEE Project's standards component, the project worked to strengthen national institutional accreditation capacity by firstly by providing technical assistance the national standards institutions/bodies, and secondly by provide technical assistance to operationalize the SANS/ISO 50001 standard by providing certification training on SANS/ISO50001 to Lead Auditors and Training Course Providers (TCPs). By the end of 2014, the project had successfully provided bridging training to 39 SANS/ISO 50001 Lead Auditors. Lead Auditors then engaged with the Project' EnMS pilot enterprises to undertake the first national SANS/ISO50001 compliance certification audits. The project was not able however to provide assistance and support for the introduction, promotion and operationalization of the new ISO 50001 Series supporting standards, namely ISO 50002 Energy Audit Standard; (ii) ISO 50003 Conformity Assessment; and (iii) ISO 50006 Energy Baselines and Performance Indicators. The project also did not support measurement and verification capacity building within the industrial sector under SANS50010, the national standard for the Measurement and Verification of Energy Savings, or the promotion of the standard within industry.

- Under the SA IEE Project’s EnMS and ESO training component, the project held in excess of 150 training workshops/courses nationally primarily at the Advanced-Level (two-day course) and the Expert-Level (six month course) and achieved the following training outcomes:
  - Over 2,300 engineers, technicians and managers received EnMS and ESO training across Introductory, Advanced and Expert levels;
  - 112 EnMS/ESO National Experts Qualified;
  - 32 National EnMS/ESO certified trainers.

While these results are impressive, the size of the South African industrial sector means that the project was unable, given its level of resources, to train a large enough number of industrial engineering personnel, especially at the Expert-Level for the two methodologies to become mainstreamed across the entire sector. Furthermore, many of those trained at the Expert-Level were in embedded within enterprises and unable to provide services to other industrial companies.

Therefore, the project was unable to capture and train the entire engineering consulting sector that would be required to ensure that EnMS and ESO services are freely available across the entire industrial sector. The SA IEE Project was only able to offer ESO courses on: (i) Fans systems; (ii) Pump Systems; (iii) Compressed Air Systems; (iv) Motor Systems; and (v) Steam Systems. Lastly, the SA IEE Project only trained engineers and engineering consultants, it did not include training for other classes of enterprise staff.

- Under the SA IEE Project’s EnMS and ESO piloting programme component, industry participation as of March 2015 had reached 168 large companies with an additional 227 SMEs having undergone ESO based energy audits. While these results are significant considering the highly energy intensive industrial sectors and lack of IEE projects and capacity that existed when the SA IEE Project started in early 2010, again given the size of the South African industrial sector, it has only scratched the surface in terms of potential energy savings that can be realized through EnMS and ESO in the wider industry and commercial subsectors. To highlight this fact, whilst there are 3,520 ISO 50001 certified companies globally, there are only six in South Africa (all of which received technical assistance from the SA IEE Project), as shown below in Table Two.
- The SA IEE Project’s awareness and communications programme component has actively raised the awareness of the industrial, consulting and Government in regard to the EnMS and ESO methodologies, releasing well over 100 articles in various formats as well as hosting, and presenting in, numerous industry and energy seminars and events. Again, given the size of the South African industrial sector, while the SA IEE Project has introduced and promoted the two methodologies widely, large segments of different industrial sub-sectors (and commercial subsectors) remain unaware or unsure of the potential energy savings that can be realized through EnMS and ESO implementation.

*Table Two: ISO 50001 Certified Companies in Germany, Africa and South Africa*

Country	No. of Companies ISO 50001 Certified	Percentage of ISO 50001 Global Certification Total
Germany	1812	51.5%
Africa as a whole	13	0.4%
South Africa	6	0.17%

The SA IEE Project has been evaluated as a highly successful project given the level of resources it had and the environment within which it started its implementation, which was characterized by low energy prices and a highly undeveloped sense for the need for IEE. Despite the level of success that the SA IEE Project has achieved, it was only able to begin the process of securing the wide-scale and sustainable embedding of the EnMS and ESO methodologies throughout the industrial sector, despite the pressing need for industry (and large commercial sector energy/electricity consumers) to improve its energy performance.

Given the size of the South African industrial sector, the SA IEE Project could not significantly penetrate the industrial sector with its EnMS and ESO pilot programme, and the majority of industry remains unaware of the potential energy and cost savings that EnMS and ESO implementation can yield. Furthermore, the SA IEE Project EnMS and ESO training courses, while being well-respected by industry are not yet commercially available through Training Providers, and therefore sustainable. Without the GEF Project, it is highly likely that the spread and implementation of EnMS and ESO within South African industry will stall and will remain within the small group of enterprises that the SA IEE Project has worked with and those that have already been trained on the methodologies at the expert-level.

Therefore, the SA IEE Project has effectively primed the ground for a follow-up initiative which can capitalize on its introductory work in order to expand and mainstream the uptake and implementation of the EnMS and ESO methodologies through the industrial sector and beyond. The GEF Project will ensure that the EnMS and ESO methodologies, in combination with the SANS/ISO 50001 Series, become a mainstreamed, sustainable and permanent approach to securing improved IEE in South Africa.

**Lessons learned from the SA IEE Project** – To ensure that the SA IEE Project lessons are available to inform the GEF Project’s intervention logic, preliminary lessons from the SA IEE Project have been identified through an independent project Preliminary Impact Assessment (PIA) that was carried under the wider evaluation functions of the SA IEE Project. The PIA revealed the following lessons and areas that required strengthening in order for the GEF Project to achieve a maximum level of impact and expansion of EnMS, ESO and the ISO 50001 Series in South Africa. See Annex J for a summary of the PIA. Key findings and recommendations are summarized in Table Three.

*Table Three: SA IEE Project Key Lesson Inclusion within GEF Project Design*

<b>Lesson Inclusion Category</b>	<b>Key Lessons and their Inclusion Measures under the GEF Project</b>
Sustaining Implemented EnMS/ESO Measures with Demonstration Enterprises	<p><i>Key Lesson</i> - The ESO Assessment Pilot Programme focused more on identifying potential savings rather than on providing necessary implementation a post-implementation support. Furthermore, the SA IEE Project didn’t supply M&amp;V assistance meaning that the pilot enterprises were not motivated or technically prepared to apply for rebates Government incentives such as 12L or to prepare project proposals for financial mechanisms/products such as the MCEP. Under the EnMS pilot enterprises, it was revealed that enterprises required post-implementation support to help them progress, refine and assess their established EnMS.</p> <p><i>Measures incorporated into the GEF Project</i> - In to address these issues, the GEF Project will provide post-implementation technical support both for ESO and EnMS and M&amp;V assistance to participating demonstration enterprises. In addition, technical assistance is also to be provided to enterprises to develop bankable project proposals for submission to different financial mechanisms.</p>
Monitoring and Evaluation	<p><i>Key Lesson</i> - Analysis of the SA IEE Project relieved that for a such complex project, a robust M&amp;E system should have set up from the start of project implementation in order to ensure proper data collection and analysis.</p> <p><i>Measures incorporated into the GEF Project</i> - Under the GEF Project a M&amp;E system will be established from the outset of the project which will focus on identifying what information is required (linked to the project’s Theory of Change); aligning these requirements with the reporting requirements of Government (to avoid duplication); creating formal data collection systems; and the updating of stakeholder contact details.</p>
Demand for EnMS and ESO and Associated Tools and Services	<p><i>Key Lesson</i> - The expected increase in demand for EnMS and ESO projects across industrial (and high energy consuming commercial) sectors would require substantial growth in the number of available trained EnMS and ESO experts and support tools.</p> <p><i>Measures incorporated into the GEF Project</i> - The GEF Project will increase the number of trained EnMS and ESO experts to conduct implementation and assessments. The GEF Project will also provide enterprise implementation ESO guides with special guidance materials for EnMS implementation in SMEs, and finally tools to help overcome practical challenges (behavioural, financial and technical).</p>

Lesson Inclusion Category	Key Lessons and their Inclusion Measures under the GEF Project
EnMS and ESO Qualifications and Training	<p><i>Key Lesson</i> - There is a growing need and demand for training in EnMS and ESO within South African industry. There is also a demand for new ESO topics not included under the existing SA IEE Phase I Project as well as for the provision of training to shop-floor and lower level enterprise staff. Analysis also revealed the need for EnMS and ESO qualification institutionalization under the South African National Higher Education Qualification Framework (NQF) to achieve long-term sustainability of training provision</p> <p><i>Measures incorporated into the GEF Project</i> - The GEF Project will develop and provide new ESO training courses on HVAC, process heating, refrigeration, smelting and foundry systems and renewable energy. The GEF Project will also diversify the level of training and support materials to include shop-floor lower skill level staff. Lastly, the GEF Project will develop the EnMS and ESO course module materials for the NQF Occupational Qualifications and promote/encourage industry practitioners to take up the qualifications.</p>
Awareness Raising	<p><i>Key Lesson</i> - Case studies and success stories help to raise awareness for different industrial applications across different industries. Analysis also showed that there is a need to expand the reach of project information and make IEE information available in tools that are accessible and understandable to a larger and growing audience, with an increased emphasis on digital content.</p> <p><i>Measures incorporated into the GEF Project</i> - The GEF Project will firstly prioritize the development and dissemination of case studies, in particular for new industrial sectors implementing EnMS and ESO. Secondly, the GEF Project will engage and employ higher degrees of mainstream media coverage dissemination via the largest distribution channels targeted at getting the GEF Project recognized and achieving a higher level of additional 'Advertising Value Equivalent (AVE)<sup>5</sup>'. Lastly, the GEF Project will work to establish a firm project brand profile in order to position the executing and implementing agencies NCPC-SA, SANEDI and UNIDO as credible thought leaders in the field of IEE nationally and internationally.</p>

Table Four below summarizes the *Baseline Project*, including relevant planned activities and co-financing from Government and other relevant stakeholders. The GEF Project activities (and associated funding) are considered incremental to this baseline.

*Table Four: Summary of the Project's Baseline Activities and Co-financing, presented by Project Component*

Project Component	Relevant Activity	Co-Financing Amount (US\$)
Component 1.0: Data quality improvement to facilitate data rich IEE and energy management policy implementation	Energy Management (EnMn) Planning regulatory initiative, and associated data gathering through energy intensity use mapping of a limited number of highly energy intensive industry sub-sectors	1,600,000
Component 2.0: Strengthening policy implementation and support frameworks for EnMS, ESO and Energy Management Standards	Government activities to implement policy and establish performance indicators, target setting and reporting standards under Government reporting (such as the EnMn Plans) and financial incentive schemes requirements (such as the MCEP)	4,250,000
	Government financial incentives: MCEP, 12I and 12L	
	SANAS, SAATCA and SABS efforts to adopt ISO 50002, ISO 50003 and ISO 50006) as a national standards and limited promotion of them within industry	
	NCPC-SA (with SAATCA) offers basic ISO50001 Lead Auditor Courses using materials developed under the SA IEE Project.	
Component 3.0: Mainstreaming EnMS	NCPC-SA convenes a small number of EnMS and existing topic ESO training programmes (at the Advanced-Level) as developed under the SA IEE Project	10,500,000

<sup>5</sup> Advertising Value Equivalent (AVE) is a measure that has been used in the public relations industry to measure the financial benefit to a client from media coverage.

Project Component	Relevant Activity	Co-Financing Amount (US\$)
and ESO Training and Skills Development Programmes	NCPC-SA supported registration processes for the two Occupational Qualifications: <i>Energy Management Advisor</i> and <i>Energy Efficiency Technician</i> to be included as National Framework Qualifications as initiated under the SA IEE Project	
	Private sector training institutions invest in establishing EnMS and ESO courses resulting in highly expensive course fees and a lower level of material quality	
Component 4.0: Investment promotion in IEE through EnMS and ESO demonstration, and financial mechanism and incentive access support for industry and selected commercial sectors	NCPC-SA conduct a small number of EnMS and ESO advisory services to industry under methodologies and formats developed under the SA IEE Project.	17,079,000
	Small level of investment in EnMS and ESO activities in S. African Industrial enterprises supported financially by Government incentive schemes: MCEP; 12I and; 12L	
	Limited investments in EnMS and ESO activities in SA Industrial enterprises supported financially by private sector financing from FIs and IFIs and international development partners such as SECO	
Component 5.0: EnMS and ESO awareness, promotion, lessons sharing and service demand generation	Government Departments, DOE and <b>dti</b> and respective agencies SANEDI and NCPC-SA's national promotion and awareness raising campaigns for IEE, EnMS, ESO and the ISO 50001 Series using materials developed under the SA IEE Project	3,150,000
Component 6.0: Project monitoring and evaluation	UNIDO and other stakeholders in-kind contribution to project monitoring and evaluation activities	200,000
<b>TOTAL</b>		<b>36,779,000</b>

#### A.4.4 Barriers to accelerating IEE in South Africa

As a result of the national power challenges that began in 2007, which led to increased electricity prices and increased policy-maker attention to EE, industrial energy performance has improved to some degree, especially in larger enterprises. Despite this push for greater IEE, the current regulatory frameworks and financial incentives for IEE remain inadequate and a variety of interacting barriers to increased IEE in South Africa prevent the realization of considerable potential and major improvements in IEE across the industrial and commercial sectors. These barriers and are listed below in Table Five along how the GEF Project's key interventions aim to address the identified barriers across its components and contained outputs.

South Africa has re-entered a challenging period under which industry increasingly faces new issues. From the side of Government and Eskom, there is an urgent drive to increase supply through the construction of additional generating capacity (mostly coal-based). However, it will take time for all the required new power plants to come on stream, both those presently under construction and those still in the planning stage, with it taking far longer still for the commissioning of the nuclear new-builds envisaged.

While the Government is putting in place higher-level strategies, plans, EE improvement targets and policy initiatives to reduce national energy consumption, the necessary secondary legislative, regulatory measures, assistance, tools/systems necessary to achieve a behavioural shift towards greater IEE are still in their early stages or yet to be put in place. Meanwhile, industry (with exception of the initial group of enterprises trained under the SA IEE Project) lack the necessary tools and options, such as EnMS and ESO, to effectively reduce their energy consumption and mitigate the impact of rapidly increasing energy prices and strengthen their competitiveness.

As a result of the identified barriers, the major technical and economic potential for the implementation of EE measures in the industrial (and commercial) sector remains largely unrealized. The market for IEE services and technologies is underdeveloped; at the same time there is still insufficient technical expertise to service demand if it were to substantially increase through strengthened policy and regulatory efforts. Strengthened policy and legal frameworks as well as and increased technical capacity to implement EnMS and ESO are necessary prerequisites to formulate the necessary enabling environment to boost the penetration of IEE technologies and services.

*Table Five: Barriers to Increased IEE in South Africa and Actions Integrated into the Project Design*

<b>Barrier Category</b>	<b>Description</b>	<b>Actions integrated in the GEF Project design</b>	<b>Components and Outputs</b>
<b>Policy and institutional</b>			
<i>Underdeveloped secondary legislation and data availability</i>	While Government has made progress towards secondary legislation and regulation, including the EnMn Planning regulatory initiative, as well as initial data gathering through energy intensity use mapping of some highly energy intensive industry sub-sectors, industrial energy planning remains challenging and mapping incomplete.	Data collection, processing and analysis as well as enhanced DoE/SANEDI data depository and sharing systems (between DoE/DEA/ <b>dti</b> ) for national industrial energy consumption/intensity mapping. Determination of the savings potential, against potential sectoral penetration rates and main challenges, of EnMS and ESO to enhance related policy formulation.	Component 1.0: Output 1.1
		EnMS and ESO best practice technology and process benchmarks to enhance related policy formulation.	Component 1.0: Output 1.2
		Targeted technical assistance and capacity building to enhance and implement IEE policies, incentives and regulatory frameworks supporting EnMS and ESO.	Component 2.0: Output 2.1
<i>Lack of industry support measures</i>	The development of required industrial enterprise support measures remains a significant challenge for Government. On the side of industry, the vast majority of enterprises will continue to lack the EnMS and ESO knowhow and capacity to undertake such initiatives independently as well as being able to prepare and implement DoE's EnMn Planning requirements (legislation yet to be promulgated). Furthermore, industry lacks the necessary know-how to implement Energy Audits (ISO 50002) and how to implement and measure energy performance using baselines and energy performance indicators (ISO 50006) in line with international standards and Government IEE incentive schemes.	Support to establish ISO 50001 Series of standards and updated training manuals and support tools for ISO 50001 Series and development of new manuals and tools to assist the introduction of Energy Audit (SANS 50002), Conformity Assessment (ISO 50003), and Energy Baselines and Performance Indicators (ISO 50006) as well as for advancing the uptake of Measurement and Verification SANS 50010. Support to prepare Industry guidelines to prepare EnMn Plans as well as for Energy Auditing and Baseline and Energy Performance Indicator setting.	Component 2.0: Output 2.2 and 2.3
<b>Coordination</b>			
<i>Insufficient coordination</i>	Given industry's importance to the South African economy and the impact of the sector's energy demand and consumption, more than one Government department/ministry are involved in the drive to increase IEE (these departments/ministries can view the drive to increase EE from different viewpoints). As such, state infrastructure and other development programmes encounter problems related to insufficient structural and operational integration (in addition to regulatory blockages and compliance obstacles).  The Government has identified a need for better intra-governmental coordination, policy coherence, private sector alignment and EE	Targeted technical assistance and capacity building to strengthen the coordination of associated activities across government departments/agencies as well as the establishment of an interdepartmental working group series focused on data driven IEE policy strengthening and associated projects.	Component 2.0: Output 2.1

Barrier Category	Description	Actions integrated in the GEF Project design	Components and Outputs
	research in the country. Efforts are being made to improve cooperation among ministries and between their energy centres/institutes (e.g. NCPC-SA and SANEDI, private sector) yet considerably more institutional coordination is needed.		
<b>Technical Capacity</b>			
<i>Insufficient Government technical capacity</i>	Government technical capacity for IEE policy-making and implementation remains significantly constrained by a lack of human resources, and expertise to develop and implement substantive and effective policies and programmes to promote and support EE in industry. Presently, the necessary industrial sector energy consumption data and benchmarking is missing, as is a cross-departmental well-structured and institutionalized monitoring, reporting and verification framework for energy performance within industry and the commercial sector. Without these systems and contained detailed information it will be difficult for the government to set appropriate and realizable targets as well as to develop the required regulation and legislation to achieve them.	Targeted technical assistance to improve data collection processing and analysis related to energy and energy policy formulation.	Component 1.0: Output 1.1 and 1.2
		Analysis of existing South African national governance structures and legislative instruments to assess capacity gaps and institutional needs in order to provide targeted capacity development as well as human capacity support programmes.	Component 2.0: Output 2.1 and 2.2
		Support to Government standards bodies/institutions to promote and operationalize ISO Energy Audit (ISO 50002), ISO Conformity Assessment (ISO 50003), and Energy Baselines and Performance Indicators (ISO 50006).	Component 2.0: Output 2.3
<i>Insufficient enterprise technical capacity</i>	As a legacy of the historical low price level of energy, inadequate energy data monitoring and analysis practices as well as insufficient technical capacity within the enterprises themselves have resulted in poor energy monitoring and performance assessments. This means it is often difficult for managers to ascertain potential energy and costs savings that might be available within their operations. Furthermore, technical expertise of industrial staff is concentrated on key equipment and attention is focused exclusively on reliability and its contribution to production, with very little or no understanding being placed on the impact of different operations on energy performance. As a result of factors such as these within the vast majority of South African enterprises, there is still a lack of structured approaches to managing energy usage	Updated and new training manuals, guidelines and support tools for ISO 50001 series, including Energy Audit (SANS 50002); Conformity Assessment (ISO 50003) and Energy Baselines and Performance Indicators (ISO 50006). Accreditation support for SANS 50010 auditors and development of an enterprise-level M&V Lite Package.	Component 2.0: Output 2.3
		EnMS and ESO training and skills development programmes, training manuals, resource packages, and curriculum for additional ESO disciplines.	Component 3.0: Output 3.1
		Technician-level EnMS and ESO courses developed and delivered with supporting bridging courses for enterprise staff as well as development of Vocational EnMS and ESO Training Course Modules and supporting materials.	Component 3.0: Output 3.2
		Guidelines and seminars for evaluation, financing and development of EnMS and ESO IEE projects.	Component 4.0: Output 4.2
<i>Insufficient expertise in the Education and Training Provider sector to independently develop and</i>	While there is both willingness in the training provider sector to deliver EnMS and ESO courses and growing demand for training courses, there are insufficient suitably trained trainers, and financial resources at these institutions to provide courses and develop the	EnMS and ESO module content and learner guides for the NQF Occupational Qualifications <i>Energy Efficiency Advisor and Energy Efficiency Technician</i> , including complete sets of learning materials engineer and operator materials and Trainer/Facilitator guides.	Component 3.0: Output 3.3

<b>Barrier Category</b>	<b>Description</b>	<b>Actions integrated in the GEF Project design</b>	<b>Components and Outputs</b>
<i>deliver EnMS and ESO courses</i>	associated materials.	Training Providers technical and capacity building support for accreditation and requirement compliance under the EWSETA accreditation process for the NQF qualifications.	Component 3.0: Output 3.3
		Delivery of NQF directed EnMS and ESP Train-the-Trainer courses.	Component 3.0: Output 3.3
<b>Awareness and information availability</b>			
<i>Limited awareness and understanding of the financial and qualitative benefits of EnMS and ESO</i>	<p>Firstly, while some enterprises now pay greater attention to energy costs (due in part to rising energy prices and as a result of the SA IEE Project), a large majority of enterprises still have limited awareness and understanding of the financial and qualitative benefits that general IEE, and EnMS and ESO specifically, can yield. Secondly, beyond the SA IEE Project, there is no structured IEE promotion, dissemination and education programmes on a scale that can make a significant impact.</p> <p>Furthermore, the Government itself largely lacks the knowledge of the savings potential, against potential penetration rates and implementation challenges for EnMS and ESO as this data has not been collected or assessed.</p>	Assistance provided to Government for data collection and assessments of savings potential, potential penetration and main challenges of EnMS and ESO.	Component 1.0: Output 1.2
		EnMS and ESO demonstration programme of 150 individual enterprises (50 large, 100 SMEs) across multiple industrial and selected commercial sectors	Component 4.0: Output 4.1
		Awareness raising, communications and outreach activities to increase awareness and showcase the benefits of implementing EnMS and ESO methodologies and disseminating demonstration project findings.	Component 5.0: Output 5.1 and 5.2
<b>Financial</b>			
<i>Finance Access Constraints</i>	<p>Despite the presence of various financing and financial incentive schemes, access to financing continues to be a major challenge, particularly for SMEs in South Africa. A number of compounding factors include: (i) limited capacity of enterprises to produce bankable IEE project proposals and investment or loan applications; (ii) inability of enterprises to meet compliance requirements and/or financial/risk assessments; (iii) the inability of SMEs to offer credit collaterals due to the typical nature of EnMS and ESO investments; (iv) limited capacity and/or understanding of bank staff of the particular risks involved in investing in IEE projects, especially for EnMS and ESO; and (v) challenges within Government incentive scheme designs.</p> <p>Many South African enterprises, in particular SMEs, have constrained access to finance for IEE projects due to their current overall business performance, financial position and capital structure (debt to equity), inability to offer credit collaterals in terms of pledges on fixed assets (property, plant and equipment). Loan securitization requirements by commercial banks and inability of enterprises/SMEs to provide</p>	Establishment of IEE Financial Match-Making Support Service within the NBI.	Component 4.0: Output 4.1
		Seminars for experts and industry personnel on Government financial incentive criteria as well as the financing criteria of banks for the development of bankable projects under EnMS and ESO with the development of associated guidelines and support packs.	Component 4.0: Output 4.2

<b>Barrier Category</b>	<b>Description</b>	<b>Actions integrated in the GEF Project design</b>	<b>Components and Outputs</b>
	sufficient collateral are in many instances the bottlenecks for access to finance for otherwise solid EnMS/ESO IEE investments with very good financial and economic return potentials.		
<i>FI sector limited knowledge of IEE projects</i>	Loan interest rates are high by international standards and there is limited competition within the banking sector to offer better loan packages. This is largely due to a lack of understanding by national banks on the commercial viability of EnMS and ESO investments (even with the quick payback options typical of ESO initiatives) as well as their lack of capability to properly appraise EnMS and ESO projects/investments with this further increasing the difficulty of securing loan financing.	Targeted technical support to FIs/IFI providers of IEE finance to develop, enhance access and evolve funding mechanisms and financial packages/credit streams. This will include establishing guidelines and training programmes for bank staff on the appraisal and risk sharing profiles of EnMS and ESO focused IEE projects.	Component 4.0: Output 4.3
<i>Limitations of Government financial incentive schemes</i>	Government incentive schemes, while definitely beneficial to enterprises that have the potential to reduce energy consumption in a commercially viable manner, can unfortunately be: (i) quite difficult and time consuming to apply for; (ii) savings need to be measured, verified and certified by systems not yet well defined and staffed in terms of auditors; and (iii) the schemes often require that the enterprise pays up-front and is reimbursed to some degree at a later stage which does not address where to source the required upfront financing. Private sector financing and funds such as the IDC/KfW GEEF have the potential to mitigate this last issue, for some enterprises, but the time lags with some of the incentive funds have made bridging loans less attractive than originally envisaged. Also the need for accredited M&V certification under the different incentives (i.e. SANS 50010) has resulted in a lower uptake by industry as M&V capacity remains restricted and therefore costly. This has resulted in the incentives being attractive mainly to industry for large projects that can justify undertaking external M&V certification.	Targeted technical support to Government financial incentive scheme providers to enhance access and evolve incentive mechanisms.	Component 4.0: Output 4.3
<i>Insufficient financial resources in Training Provider sector to independently establish and offer EnMS and ESO courses</i>	EnMS and ESO training is presently offered in South Africa by the SA IEE Project on a subsidized basis where the project pays for the trainers, with the participants paying a relatively small fee (to ensure commitment). While the courses are highly popular the demand is not yet to a level which would facilitate full cost recovery – with this being especially acute when considering new ESO topics as they will require the reintroduction of high-cost international specialist trainers.	Course module content and training materials will be developed and provided. Assistance will be given to facilitate NQF accreditation. Awareness raising and course promotion will be undertaken to help ensure sufficient demand for courses so they are economically viable.	Component: 3 Output: 3.1 3.2 3.3

Barrier Category	Description	Actions integrated in the GEF Project design	Components and Outputs
	<p>The NQF Occupational Qualifications process should gradually address this situation but commercial Training Providers lack the course module content and training materials to offer the course modules and pass a number of the eligibility criteria that would facilitate their competency accreditation under the NQF qualifications to offer the two courses. Compounding this issue is that there are still not enough qualified national expert EnMS and ESO (existing topic) trainers. These factors, unless addressed, will result in the courses being very costly. Furthermore, while industry demand is present, further stimulation will be required to ensure demand reaches a level of full commercial cost recovery.</p>		

**A.5 Incremental / Additional cost reasoning:** describe the incremental (GEF Trust Fund/NPIF) or additional (LDCF/SCCF) activities requested for GEF/LDCF/SCCF/NPIF financing and the associated global environmental benefits (GEF Trust Fund) or associated adaptation benefits (LDCF/SCCF) to be delivered by the project:

The incremental project remains largely the same as described in the PIF. Some outputs have been adjusted to ensure full alignment with recent changes in the baseline including progress and lessons from the SA IEE Project, and to establish linkages with other national and international initiatives.

***Component 1.0: Data Quality Improvement to Facilitate Data Rich Industrial Energy Efficiency and Energy Management Policy Implementation***

Consultations during the PPG phase confirmed that incomplete information regarding industrial energy consumption and use patterns remains a major barrier to energy management policy formulation, implementation and ultimately realizing IEE targets. This is particularly the case for information gaps in the Integrated Energy Plan (IEP), the NEEAP and 2016 – 2030 EE strategy targets. To address information barriers and foster a national and transparent culture of industrial energy consumption/usage monitoring with improved data and reporting, Component 1.0 will therefore provide the technical assistance to the Government to undertake energy consumption/intensity mapping and savings potential determination against potential penetration rates and challenges of EnMS and ESO in line with ISO 50006 methodologies within selected industrial and commercial sectors. The GEF Project will also establish EnMS and ESO best practice benchmarks to effectively capture and compare theoretical technical EE potentials.

Completion of these outputs under Component 1.0 will provide the DoE and the dti (as well as DEA in regard to GHG data), with the necessary data to properly target and assess industrial enterprise energy management practices and potentials for improvement under EnMS and ESO implementation scenarios.

**Expected Outcomes:** Strengthened energy management planning (and related energy and GHG emissions reduction target setting) through improved data and reporting on energy consumption and potential savings under EnMS and ESO.

**Output 1.1:** *Energy consumption/performance mapped with the savings potential determination, against potential penetration and implementation challenges of EnMS and ESO in line with ISO 50006 methodologies within selected industrial and commercial sectors*

Technical assistance will be provided to the DoE to produce a thorough energy consumption baseline mapping study to gain a structural, detailed and in-depth picture of each industrial subsector and their energy use dynamics. The mapping will detail sectoral energy consumption (and associated GHG emissions and potential reductions), and the energy savings potential in regard to expected potential penetration rates and the main challenges of EnMS and ESO implementation, in line with ISO 50006 methodologies which measure energy performance using Energy Baselines (EnB) and Energy Performance Indicators (EnPI). The data will be contained in a central repository that will feed into the recently established South African Energy Efficiency Target Monitoring System and the necessary institutional mechanisms put in place, to ensure the sustainability, accuracy and relevance of this source of information. This activity will be reinforced with all data visually represented in a national energy efficiency Geographic Information System (GIS), which will form part of the Energy Efficiency Target Monitoring system. These initiatives will ensure a thorough information baseline for the Industry and Mining Action Plan contained within the NEES and the NEEAP and its 2016 – 2030 EE strategy targets.

As mentioned in Section A.4.3 the DoE is currently undertaking energy intensity mapping of iron and steel, non-ferrous metals, non-metallic minerals and chemicals sectors, however the paper and pulp, textile, automotive, manufacturing, mining and non-manufacturing industry, agriculture and agro-processing sectors remain unmapped. The GEF Project will provide technical assistance to map these

additional sectors as indicated by the DoE and expanding the mapping analysis of previously mapped sectors to also include the following EnMS and ESO considerations:

- Assessment of energy saving scenarios potential through detailed modelling of available data, including potential EnMS and ESO against penetration rates and implementation challenges reflecting on data gathered from the SA IEE Project and EnMS and ESO best practice benchmarks to be established under Output 1.2.
- The possible impact of behavioural changes in the usage of energy within a plant that could lead to a decrease in energy consumption that has not been included by the DoE in their current study.

In line with wider Government initiatives, Output 1.1 will also contribute to inter-governmental initiatives to align energy and GHG emissions industrial enterprise reporting structures between the DEA, DoE, dti, and National Treasury, in order to strengthen and synergize the coordination of activities in regard to with target setting and reporting requirements. These include: (i) national GHG emissions; (ii) energy management planning; (iii) the National Energy Efficiency Strategy (and contained measures); (iv) the Integrated Energy Plan (IEP) and the Integrated Resource Plan for Electricity (IRP); (v) the National Climate Change Response Strategy; and (vi) National Communications to the UNFCCC as well as other associated national plans strategies and reports. This will assist to minimize overburdening enterprise reporting and ensure data compatibility across multiple platforms and Government objectives, needs and requirements.

The GEF Project will work with SANEDI and the DoE to undertake the baseline assessments, and also with the dti, DEA, and National Treasury to align enterprise data requirements related to the Project. The key activities under Output 1.1 are:

- Activity 1.1.1 Gap analysis and assessment of necessary capacity assistance to strengthen data collection, quality processing and interpretation analysis by DoE and SANEDI.
- Activity 1.1.2 Technical capacity enhancement programme to strengthen data collection mechanisms and data processing practices within the DoE and SANEDI.
- Activity 1.1.3 Assistance to inter-governmental initiatives to align data, requirements, surveying methods, and industrial enterprise outreach methods as well as supporting tools to assist in the setting of targets, and performance indicator establishment, in line with ISO 50006.
- Activity 1.1.4 Baseline assessment in selected industrial sectors of energy use dynamics, energy consumption and savings potential (and associated GHG emissions reductions), EnMS and ESO against potential penetration rate scenarios and implementation challenges for implementation in non-mapped industrial sub-sectors.
- Activity 1.1.5 Technical assistance (in the form of expert review and focus/stakeholder consultation groups) provided for planned periodic reviews and updates of energy intensity reduction and energy management targets.
- Activity 1.1.6 Technical assistance (in the form of expert review and focus/stakeholder consultation groups) to periodically and independently review and update GHG calculations and targets of the NCCRS (DEA).

***Output 1.2 Country specific EnMS and ESO best practice technology and process benchmarks established in line with the NEES and NEEAP***

The GEF Project will conduct a country-specific EnMS and ESO best practice technology and process benchmarking under SANEDI to assess theoretical best-practice technical IEE potentials in line with ISO 50006 principles. The different sub-sectors and enterprise ranges targeted under the Industry and Mining Action Plan, contained within the NEES, will be benchmarked in terms of energy performance/intensity against corresponding national EnMS and ESO best-practice scenarios. These scenarios will be constructed with a view to national embedded production techniques and existing capital stock, but also with consideration to international best-practice where appropriate. Country-specific EnMS and ESO best practice technology and process benchmarks will enable the DoE and the rest of Government to better assess industrial energy management options and associated reduction targets against established benchmarks for each industrial sub-sector. Effort will be made to review international best practice and its applicability to local conditions. National determined

benchmarks are required for a number of reasons. Firstly blanket-style application of international benchmarks could result in additional pressure for factory closure where the cost of replacing existing embedded capital stock is prohibitive, with this running against the Government's main objective of job creation and retention. Secondly, South Africa has some industrial processes that are unique such as very deep mining. Lastly, the SA IEE Project has developed a wealth of in-country experience in developing EnMS and ESO best practice examples.

The GEF Project will work through SANEDI under their energy research functions to ensure long-term process and data ownership, while also working closely with the DoE, dti, and NCPC-SA to establish best-practice benchmarks through the following activities:

- Activity 1.2.1 EnMS and ESO technology and process best practice benchmarks using country-specific examples (also considering international best practice where appropriate) under the Industry and Mining Action Plan contained within the NEES.
- Activity 1.2.2 Periodic review (x2) and update of EnMS and ESO benchmarks (following project midterm review and prior to project closure).

### ***Component 2.0: Strengthening Policy Implementation and Support Frameworks for EnMS, ESO and Energy Management Standards***

This component will assist the Government in strengthening policy and standards implementation and will develop support frameworks that will foster increased investment in IEE through EnMS and ESO methodologies. Specifically, Component 2.0 will assist Government to promote energy management standards and the enforcement of relevant regulations, including Energy Management Planning. The component will also assist industry to meet these new requirements through technical support packages.

Consultations with stakeholders during the PPG phase revealed that a systematic analysis of South African IEE policy implementation, support frameworks and governance structures, as well as review of possible targeted technical assistance measures is necessary to identify weaknesses and possible synergies for IEE with other legislative measures in order for the GEF Project to assist in strengthening IEE policy, its implementation and supporting frameworks/tools. This approach is necessary to avoid overburdening already overstretched Government and enterprise stakeholders. Secondly, in order to strengthen the target setting policy environment, this component will then supply targeted assistance to facilitate target setting and reporting standards in order to align EnMS and ESO projects with Government reporting (such as the EnMn Planning regulatory measures) as well as financial incentive schemes requirements (such as the MCEP 12I and 12L). The component will also focus on the promotion of gender equality aspects, where beneficial in terms of enhancing policy sustainability and associated implementation frameworks.

Furthermore, support was deemed necessary to scale-up the implementation of ISO and South African National Standards (SANS) EnMS standards in support of Government policy goals and achieve the IEE targets contained within the NEES. This support will take the form of training courses for the industrial and management SANS/ISO standards fraternity as well as for industrial enterprise personnel where certain series standards are concerned. All courses will have the required accompanying tools and guidelines to support existing standards and those still in their draft phase of adoption as national SANS standards. Specifically, continued support is necessary to further build national SANS/ISO 50001 auditing capacity and to assist the operationalization and promotion of Energy Audit (ISO 50002); Conformity Assessment (ISO 50003); and Energy Baselines and Performance Indicators (ISO 50006); as well as to provide support for expanding national M&V capacity under Measurement and Verification of Energy Savings SANS 50010). Building on the results of the SA IEE Project, female participation will be significantly promoted under the ISO50001 Series activities, as the standard provides a considerable entry point for increased female participation in the IEE field.

Component 2.0 will therefore provide the following:

- Analysis of South African national governance structures and legislative instruments and identification of existing government capacity gaps and synergies for enhanced coordination.
- Targeted assistance such as tools/training to strengthen institutional and policy frameworks to increase the uptake of EnMS and ESO as well as to align and strengthen the coordination of IEE policy and regulatory frameworks.
- Continued and expanded support to scale-up and accelerate the uptake of the ISO 50001 Series (ISO: 50001, 50002, 50003, 50006) of standards and SANS 50010.
- Promotion of gender equality aspects where beneficial in terms of enhancing policy and implementation framework.

**Expected Outcomes:** Enhanced promotion of investment in IEE through strengthened policy and regulatory frameworks and support to increase the uptake of energy management standards.

**Output 2.1** *Targeted technical assistance and capacity building to enhance and implement IEE policies, incentives and regulatory frameworks supporting EnMS and ESO uptake and strengthening the coordination of associated activities across government agencies*

Under this output, an analysis will be undertaken (with reflection to international examples of successful IEE policies and institutional arrangement) to explore synergies with existing governance structures, regulatory frameworks and legislative instruments (such as the tax act) that could be modified to include IEE related policies. Targeted technical assistance and capacity building will be provided by the GEF Project to departmental officers and the personnel of their respective centres/programmes (DoE, DEA, **dti**, SANEDI, NCPC-SA) to assist them to better reformulate, expand and strengthen policy and regulatory measures that will support increased investment in IEE.

To enhance coordination across IEE policy, reporting and associated projects under implementation, a National IEE Policy and Project-Working Group will be established. The working group, will be established between government departments and their respective implementation agencies (DoE, DEA, **dti**, SANEDI, NCPC-SA) as well as project implementers and donors (e.g. UNDP, UNIDO, SECO; GIZ etc.) and other relevant stakeholders, and will meet (twice yearly) to form an IEE network exchange group to share IEE related knowledge, provide updates on initiatives and strengthen the coordination of IEE policy, regulatory frameworks and projects. The initiative will be led by the DoE under SANEDI to ensure long-term and sustainable ownership of the process. Of particular focus will be initiatives to support reporting in order to ensure data driven policy and regulation implementation and revision and the linking of EnMS and ESO to offsetting and incentives. The working group will also engage Departmental Gender Focal Points to examine gender equality issues within the national IEE space and enhance policy tools that will promote female roles in IEE as well as seeking to maximize IEE benefits from the active participation of women. Expert capacity support will be provided to Government to analyze the effects of linking EnMS and ESO with possible national carbon tax scenarios, and to conduct macroeconomic analysis of the effects of EnMS and ESO on national manufacturing, emissions, job creation and retention and energy tariff indicators and to ensure integration of EnMS and ESO into the Integrated Energy Plan and similar Government initiatives.

The activities to be undertaken include:

- Activity 2.1.1 Analysis of existing South African national governance structures and legislative instruments to determine relevance to IEE implementation for enhanced implementation effectiveness.
- Activity 2.1.2 Institutional needs assessment to determine the capacity gaps within the Government (DoE, DEA, DST, **dti**, National Treasury, SABS, SANEDI, NCPC-SA) in regards to modifying and strengthening the implementation policy and regulation related to IEE. The needs assessment will also include a review of industry related gender issues and how to actively promote increased participation of women in IEE.
- Activity 2.1.3 Capacity development (four workshops and training) for Government officers and (DoE, DEA, DST, **dti**, SABS, SANEDI, NCPC-SA) embedded experts within DoE, and,

SANEDI to in order to ensure long-term skills retention and capacity enhancement of these two institutions to implement and enhance IEE policies and regulations, particularly those that can actively support EnMS and ESO uptake, including Energy Management Planning.

- Activity 2.1.4 IEE Government policy consultative dialogue workshop series (two per year and eight in total) with the corresponding establishment of a network group between Government departments/bodies (DoE, DEA, DST, **dti**, SANEDI, NCPC-SA), project implementers (UNDP, UNIDO, SECO, GIZ etc.) as well as other relevant stakeholders in order to improve IEE policy and regulatory implementation and to link EnMS and ESO implementation measures employed by enterprises under incentive programmes and within offsetting under the possible national *DEROs* and carbon tax scenarios.
- Activity 2.1.5 Technical assistance provided to Government departments to prepare five additional industrial enterprise guidelines and technical support packages (one per selected sector) for proposed but yet to be promulgated industry policies/regulations in line with Government IEE regulatory schemes, e.g. Energy Management Planning and their contained energy intensity reduction targets. This will include the development of enhanced policy tools that will promote female roles in IEE.
- Activity 2.1.6 Technical assistance in the form of embedded expert support to SANEDI to conduct targeted macroeconomic analysis in regard to the impact of IEE and EnMS and ESO in order to incorporate EnMS and ESO into the wider analysis functions of the Integrated Energy Plan and other appropriate policy tools (with at least three position papers being produced).

**Output 2.2** *Assistance to operationalize SANS/ISO 50001 with additional advisory support, and recommended actions for Government and Standards Bodies to promote and mainstream Energy Audit (ISO 50002); Conformity Assessment (ISO 50003); and Energy Baselines and Performance Indicators (ISO 50006)*

The introduction of GEF Project assistance for the ISO 50001 Standard Series under a modified Output 2.2 from the PIF was deemed necessary to continue operationalization and to expand the main *SANS/ISO 50001 Energy Management Systems Standard* as well as to provide implementation support for the promotion, and operationalization of the ISO 50001 Series of supporting standards as they are developed and adopted as South African national standards. Therefore, building on the awareness and capacity development activities provided to Government standards and conformity assessment bodies (SANAS, SABS and SAATCA), as well as to the industrial consulting/auditing sector, under the SA IEE Project, Output 2.2 will provide assistance and guidance to national standards bodies on: (i) *ISO 50002 Energy Audit Standard*; (ii) *ISO 50003 Conformity Assessment*; and (iii) *ISO 50006 Energy Baselines and Performance Indicators*. In addition, Output 2.2 will also provide M&V technical and support assistance to the relevant institutions and bodies in order to accelerate and expand M&V capacity and the uptake of the *SANS 50010 Measurement and Verification of Energy Savings* standard. SANS 50010 is the M&V mechanism for South African Industry to apply for tax rebates under the 12L Incentive and therefore Output 2.2 will assist industry to meet the requirements of Government IEE initiatives through technical energy management support packages.

The activities to be undertaken include:

- Activity 2.2.1 Advisory support for Government and relevant national standards bodies (SABS, SANAS and SAATCA) to scale-up the application of the ISO 50001 Series standards through the analysis of international implementation best practice of ISO 50002, ISO 50003 and ISO 50006.
- Activity 2.2.2 Support to Government, SANAS, SAATCA and SABS to promote and mainstream the application of ISO 50002, ISO 50003 and ISO 50006 as national standards within industry through a series of five promotional events/seminars/workshops.
- Activity 2.2.3 Technical assistance/capacity development in form of two SANS 50010 requirement training seminars provided to potential ‘Centres of Training’ for M&V Auditors under SANS 50010 criteria and assistance to SANEDI for the establishment of a National Measurement and Verification Centre at the Energy Efficiency and Demand Side Management

(EEDSM) Hub at the University of Pretoria, with additional guidance on how to promote enhanced female participation rates in M&V auditing.

- Activity 2.2.4 Technical assistance provided to in the form of three training seminars to potential SANS 50010 auditing and certification bodies, including SANAS accreditation support and preparation.
- Activity 2.2.5 Identification and securing of lead enterprises for M&V SANS 50010 certification and 12L Tax Incentive application, drawn from the pool of SA IEE Project and GEF Project EnMS and ESO pilot and demonstration enterprises.

**Output 2.3** *Training courses with supporting tools for the ISO 50001 Series to assist in the introduction of Energy Audit (SANS 50002), Conformity Assessment (ISO 50003) and Energy Baselines and Performance Indicators (ISO 50006) as well as promote increased M&V and the uptake of SANS 50010*

This additional output builds on the initial SANS/ISO 50001 main standard Lead Auditor and Training Course Provider (TCP)<sup>6</sup> capacity building that was achieved under the SA IEE Project and will assist industry and the industrial auditing sector to meet the auditing, conformity and baseline and performance requirements of the complete ISO 50001 Series of standards. This output will therefore support the further operationalization and expansion of the main *SANS/ISO 50001 Energy Management Systems Standard* as well as the introduction and operationalization in ISO 50002, ISO 50003 and ISO 50006 under wider Government IEE initiatives. The GEF Project will provide resources to the NCPC-SA and SANEDI to conduct tailored auditor fraternity and enterprise sector capacity building in regard to the individual ISO 50001 Series standards for industrial and management SANS/ISO standards practitioners (as well as for industrial enterprise personnel where appropriate).

Under the SA IEE Project, the SANS/ISO50001 Leader Auditor training course had the highest degree of female representation of candidates with a portion of 26%. Certification auditing under the SANS/ISO50001 standard, and its series of supporting standards, is a new area of business opportunity and one that has considerable potential in terms of providing an entry point for increased female participation within the IEE field in South Africa and therefore for promoting gender equality. Therefore, the GEF Project will actively promote the increased inclusion of women under the different capacity building courses through developing and expanding relationships with bodies such as South African Women in Energy Networks (SAWIEN) to maximize outreach within women's engineering and management standards communities.

To achieve this, Output 2.3 will support the updating of the existing '*ISO 50001 Lead Auditor and Training Centre Provider*' training course and associated materials. SAATCA registered TCPs are able to commercially offer ISO 50001 Lead Auditor training and therefore they, will operate the market for the main ISO 50001 Standard training, with competency oversight from SAATCA. Output 2.3 will then develop and provide training courses with corresponding support tools for industry and the auditing sector on: Energy Audit (ISO 50002), Conformity Assessment (ISO 50003) and Energy Baselines and Performance Indicators (ISO50006). The course materials will be updated periodically over the lifetime of the project to include evolution/refining of the standards and provision for future Government policy and regulation affecting industry, such as the yet to be promulgated EnMn Planning regulation. TCPs again will ultimately be the final custodians of the ISO 50001 Series standards training market as they have the long-term legal standing and commercial incentive to sustainably offer this kind of training as a business.

Additional M&V and SANS50010 capacity building will be supplied to industry through competency qualified institutions under the supervision of SANEDI, with the training and associated materials also adapting to possible changes in the requirements under the 12L Tax application requirements (e.g. development of enterprise self-assessment and regulation options – i.e. M&V Lite where

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<sup>6</sup> A Lead Auditor is a professional certification for audit team leaders working for certification bodies or performing supplier audits. A Training Course Provider (TCP) is a commercial provider of management system auditor standards training registered by SAATCA to provide training. TCPs are often Lead Auditors who are based in private entities, with SAATCA registration.

enterprises will be able to use self-assessment tools and guiding materials and simply checking mechanisms to assess their own energy savings or performance improvement).

Activities under Component 2.3 include:

- Activity 2.3.1 Updating of existing Lead Auditor and Training Centre Provider training course and associated materials and support tools for the SANS/ISO 50001 standard. Supporting ancillary summary and industry promotion materials will highlight the positive role of women to boost interest.
- Activity 2.3.2 Development of training courses and associated materials and industry resource tools for Energy Audit (SANS 50002), Conformity Assessment (ISO 50003) and Energy Baselines and Performance Indicators (ISO50006). Supporting ancillary summary and industry promotion materials will highlight the positive role of women to boost female interest in IEE.
- Activity 2.3.3 Provision of training courses on SANS/ISO 50001 Lead Auditors, Energy Audit (SANS 50002), Conformity Assessment (ISO 50003) and Energy Baselines and Performance Indicators (ISO 50006). Promotional and partnering measures will be deployed along with developed support tools that support and encourage women's increased participation.
- Activity 2.3.4 Technical assistance provided to SANEDI to develop additional Energy Audit and Energy Baselines and Performance Indicator tools (e.g. software tools) in line with ISO 50002 and ISO 50006 respectively.
- Activity 2.3.5 M&V training provided to industry, with the provision of 'M&V Lite' training and resource materials.

### **Component 3.0: *Mainstreaming EnMS and ESO Training and Skills Development Programmes***

Consultations during the PPG Phase and the findings of the PIA have shown that while the SA IEE Project EnMS and ESO training programmes have been well received and successful at introducing the two methodologies into the South African industrial sector, the vast potential and need for EnMS/ESO skills development and capacity building remains undeveloped due to the size of the sector. In particular, the PPG Phase and PIA revealed a need for the GEF Project EnMS/ESO training programme to: (i) conduct EnMS and ESO training with expanded ESO topics; (ii) expand its reach to move beyond enterprise managers and engineers to encompass technicians and process line managers in order to promote EnMS and ESO understanding and acceptance right across the relevant industrial enterprise employee base (including developing courses for Technical and Vocational Education and Training - TVETs); and (iii) provide Expert-Level ESO graduates with continued mentoring to increase their subject knowledge and practical experience.

Furthermore, the SA IEE Project began the process of establishing 'Energy Management Advisor' and 'Energy Efficiency Technician' as 'Occupational Qualifications'<sup>7</sup> under the South African National Qualifications Framework (NQF). These two qualifications, once registered and properly resourced with training materials and offered by commercial Training Providers accredited under the NQF qualifications, should facilitate a transition to a sustainable EnMS/ESO training provision market thereby providing an phased exit strategy for the NCPC-SA and project supported EnMS and ESO training programmes. However, the technical expertise and financial investments required to meet these needs and establish commercially viable courses under NQF and educational structures is a complex and costly task. Therefore, this remains a major barrier for long-term mainstreaming of EnMS and ESO training programmes where these programmes should be taken up independently on a commercial basis.

Under the SA IEE Project, EnMS training had a female participation rate of 20% and 12% for the Advanced and Expert levels respectively, while under the five existing ESO courses subjects (fans,

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<sup>7</sup> An Occupational Qualification is defined in South African law as a qualification associated with a trade, occupation or profession resulting from work-based learning and consisting of three components, one for knowledge, one for practical skills and one for work experience. All occupational qualifications require a final test or what is called 'an external, summative assessment' which, when successfully passed, signals to the world that the person is able to fully perform the work of the occupation."

compressed air, pumps, motors and steam) the combined averaged total was 14% for the Advanced Level and 9.0% for the Expert Level. In order to increase the gender equality functions of the expanded EnMS and ESO training programme under the GEF Project, focus will be given to promoting increased female participation through working with bodies such as SAWIEN, *Women in Engineering* (WomEng) as well as other women's bodies within the industrial sectors to reinforce the training information and marketing to highlight positive messages of female participation and subsequent career development. The training programme itself will also be adapted to help promote increased female participation through such measures as offering selected free training slots for female candidates of participating companies. The training programme will ensure sensitive planning in terms of family responsibilities as well as ensuring that adequate facilities are provided.

Under Component 3.0, the GEF Project will expand the EnMS and ESO capacity of the South African industrial sector by developing and delivering various EnMS and ESO training courses as outlined below. The engineer directed Advanced-Level and Expert-Level EnMS and ESO training courses will be provided in the same way that the SA IEE Project delivered its training, namely focusing on the three main industrial regions in South Africa, these being: (i) Gauteng (Johannesburg and Pretoria); (ii) Durban; (iii) Cape Town (although training in Port Elisabeth and East London is also expected). In terms of scale, the GEF Project will aim to surpass the level of success as the SA IEE Project at the Expert-Level of training, with a resulting in a target of 120 EnMS and ESO expert-level candidates successfully graduating from the different courses. At the Advanced-Level, the GEF Project will train over 800 candidates under a mix of EnMS and ESO topics. The Component will also supply special capacity building to the Training Provider sector to ensure successful development and delivery of two Occupational Qualifications and their contained EnMS and ESO modules. This will be achieved by undertaking the following:

- Offering EnMS and ESO courses, while expanding the training and skills development programme by developing new ESO topics and corresponding training manuals and resource packages for the engineer/manager level as well as developing new SME EnMS implementation guides, trainer guides and assessment tools for EnMS and new ESO disciplines.
- Expanding the reach of EnMS and ESO courses by offering them at multiple levels of employee position (i.e. expanding to technicians and process line managers) as well as developing higher education vocational course modules under the Department of Higher Education (DHE) to be offered at Technical and Vocational Education and Training (TVET) institutions.
- Upon completion of the NQF Occupational Qualification registration processes for the qualifications: *Energy Management Advisor* and *Energy Efficiency Technician* (initiated under the SA IEE Project) undertaking the development of the NQF compliant EnMS and ESO module training materials. Capacitating private sector Training Providers to take up the NQF Occupational Qualifications commercially and ensure long-term and sustainable training provision.
- Assist in the development of an Energy Efficiency Industry Professionals Association body tasked with representing these newly trained EnMS and ESO industry professionals.

**Expected Outcomes:** Expansion of the EnMS and ESO capacity building programme with the inclusion of new ESO topics and multi-level enterprise trainee courses under parallel NQF institutionalization and market capacitation enhances the capacity of the South African industrial sector to implement EnMS and ESO and achieve energy savings.

**Output 3.1** *Expanded Engineer-Level EnMS and ESO Industry Capacity Building courses developed and delivered including new professionally recognized ESO topics, graduate mentorship and SME EnMS Implementation Guide resource packages and learning materials*

Under this Output, the GEF Project will provide resourcing to continue and expand training of industrial enterprise engineers and consultants on the EnMS and ESO methodologies. It will develop gender sensitive resource packages and learning materials for new ESO course topics including HVAC, process heating, refrigeration, smelting and foundry systems and renewable energy use in

industry. Increased female participation will be achieved through the promotion measures described above in the component introduction. Beyond promoting increased female participation, the GEF Project will also maximize the use of female EnMS and ESO trainers. The GEF Project will achieve recognition of the new Advanced and Expert Level topic ESO courses under the ‘*Continuous Professional Development (CPD)*’ system operated by the South African Institution of Mechanical Engineering (SAIMEchE) under the Engineering Council of South Africa (ECSA). The GEF Project will also develop and deliver an Expert-Level ESO Graduate Mentoring Programme that will pair recent graduates with previously established experts to conduct ESO assessments in order provide opportunities to increase their subject knowledge and practical experience. The GEF Project will also develop and disseminate an in-plant South African SME EnMS implementation guide.

Activities under Output 3.1 will include:

- Activity 3.1.1 Delivery of existing Advance-Level and Expert-Level EnMS and ESO training courses with 70 Experts being trained and 400 Advanced-Level participants being trained. Courses will be delivered under gender sensitive planning and facility provision.
- Activity 3.1.2 Development and delivery additional Advance-Level and Expert-Level ESO Disciplines (i.e. HVAC, process heating, refrigeration, smelting and foundry systems and renewable energy) with associated training packages - including the purchase of training system measurement equipment. 50 Experts and 300 Advanced-Level participants to be trained. Courses will be delivered under gender sensitive planning and facility provision.
- Activity 3.1.3 New ESO courses prepared, presented and taken through the SAIMEchE CPD recognition process.
- Activity 3.1.4 Development and dissemination of a SME EnMS Implementation Guide.
- Activity 3.1.5 Development and delivery of ESO Expert-Level Graduate mentoring with a programme for onsite industrial ESO assessment and implementation experience under the guidance of senior experts as well as ESO course co-facilitation opportunities. Where possible female mentoring will be provided by female previous ESO experts.

***Output 3.2 EnMS and ESO Technician-Level Courses developed and delivered with supporting bridging courses for enterprise staff as well as development of Vocational EnMS and ESO Training Course Modules and supporting materials***

Under this output the GEF Project will diversify the EnMS and ESO training programmes by developing and delivering new lower-level (technician/process line manager level) courses. Bridging level ESO courses will also be developed and delivered where necessary to raise mathematical capacity to a point enterprise staff can handle any formula based parts of their respective courses. The training courses will also seek to promote female enterprise employee participation through showcasing women in management as active agents of change within companies. Course materials will be designed in a way that highlights the potential contribution of women and their active role within company level EnMS and ESO programmes as well as to promote increased female student interest in pursuing vocational and higher education-level studies and careers through partnerships with relevant stakeholders.

EnMS/ESO Technician courses will be initially offered by the GEF Project through the NCPC-SA. However, in the medium to long-term the training of technicians in EnMS and ESO aspects will be offered by the “*Energy Efficiency Technician*” NQF Occupational Qualification. In regard to vocational student training, the GEF Project will develop EnMS and ESO course modules to be presented to the Department of Higher Education (DHE), for their inclusion into relevant training courses so that they may be offered in selected vocational programmes at TVET institutions. Appropriate TVET institutions will be selected by the DHE under vetting supported by the GEF Project, with the GEF Project capacitating the selected institutions with teaching materials and teacher support packages (these packages will contain aspects on promoting female career paths at the technician level in regard to EnMS/ESO areas). Further quality assurance of these courses will be provided by the appropriate sub-frameworks of the DHE. All of the below activities will include consideration of gender dimensions in their design and execution including consideration of course

financial cost reduction options to promote the increased participation of female candidates from participating companies.

Activities under Output 3.2 will include:

- Activity 3.2.1 Development and delivery of EnMS training programmes for South African industry personnel at the technician/plant operator staff level. Including consideration of gender dimensions and forming network groups with women's groups to actively promote the participation of women.
- Activity 3.2.2 Development and delivery of ESO training programmes for 500 South African industry personnel at the technician/plant operator staff level – including bridging assistance for plant-based training courses. Including consideration of gender dimensions and forming network groups with women's groups to actively promote the participation of women.
- Activity 3.2.3 Development and embedding of different Technician/Operator level EnMS and ESO course modules within vocational programmes offered by selected TVET institutions including the EnMS and ESO methodology capacity building of their lecturing staff.
- Activity 3.2.4 Development of gender responsive TVET vocational-level EnMS and ESO teaching materials and teacher support packages to assist in the conducting of teaching.

**Output 3.3** *Institutionalized and NQF Compliant EnMS and ESO training course materials developed and provided to commercial Training Providers combined with targeted capacity building and market development initiatives as well as assistance to establish a Green Industry Professional Association*

Under this output, the GEF Project will incrementally fund a number of areas associated with the NQF development process for the qualifications of “*Energy Management Advisor*” and “*Energy Efficiency Technician*” until the training provider market develops to a stage where it can function sustainably on a commercial basis. Output 3.3 will undertake: (i) the development of the EnMS and ESO NQF compliant training course materials for both levels of training course (in partnership with other stakeholders where possible) for use by Training Providers; (ii) capacity building of Training Providers to ensure their eligibility for competency compliance and to assist them in gaining accreditation under the abovementioned qualifications; and (iii) continued EnMS and ESO Train-the-Trainer courses to ensure training providers have an adequate supply, as well as in-house capacity, of NQF Qualification EnMS and ESO module trainers. The GEF Project will positively promote the inclusion and training of female Training Provider staff under the EnMS and ESO modules of the two Occupational Qualifications so that they can be accredited as competent to conduct training. The GEF Project will also seek to promote increased levels of female participation, in a similar fashion to Output 3.1, within the two commercially offered NQF Occupational Qualification courses as demand for the two course increases and they eventually begin to replace the NCPC-SA offered EnMS and ESO courses.

Lastly under Component 3.0, the GEF Project will support the initial processes of establishing a Professional Body to represent EnMS and ESO practitioners. There is currently no existing entity that can perform the crucial role of registering and representing qualified EnMS and ESO practitioners, establishing a code of practice, awarding professional designations under existing legislation, and developing and providing quality assurance for new qualifications. The Body will raise the credibility and demand for qualified Energy Efficiency Professionals, improving employability and contributing to job creation. The GEF Project will involve all relevant national energy/engineering and gender focused institutions to ensure that gender equality promotion will be a function of the final body.

Activities under Output 3.3 will include:

- Activity 3.3.1. Development of gender sensitive learner guides for *Energy Efficiency Advisor* and *Energy Efficiency Technician*, which will include a complete set of learning materials (fully aligned to the two Occupational Qualifications, consisting of redesigned and adapted UNIDO EnMS and ESO (existing and new topic) engineer level and operator level materials.

- Activity 3.3.2. Development of gender sensitive Trainer Facilitator guides that are fully aligned to the two Occupational Qualifications.
- Activity 3.3.3. Industry and training sector promotion packages consisting of three national seminars and media materials to promote the uptake of the “Energy Management Advisor”, and “Energy Efficiency Technician” occupational qualifications and their contained ‘Part Qualifications’<sup>8</sup>. Specific promotion packages will be developed to promote women’s participation under the two different occupational qualification training courses.
- Activity 3.3.4. Support Training Providers with pre-accreditation technical and capacity building assistance as well as recommendations to ensure their competency requirement compliance under the EWSETA accreditation process for the two NQF qualifications. This will include active promotion of the inclusion of female Training Provider staff.
- Activity 3.3.5. Delivery of NQF directed EnMS and ESO Train-the-Trainer courses with active promotion of increased levels of women trainers.
- Activity 3.3.6. Scope and convene a Working Group tasked with leading the initial process of establishing the professional body with capacity building for key stakeholders.
- Activity 3.3.7. Support gender inclusive marketing and communication activities, aimed at growing the membership interest and demand for the professional body through the activities of Component 5.0.

**Component 4.0: *Investment Promotion in IEE through demonstration of EnMS and ESO and support to access financial mechanisms and incentives for industry and selected commercial sectors***

This component will directly increase investment in EnMS and ESO implementation in industry and selected commercial sectors under methodologies, both directly through the development of pilot EnMS ESO enterprises and indirectly through the dissemination of the pilot experiences (and the benefits realized). It will also provide support to align government and private sector finance with enterprise EnMS and ESO projects.

The industrial sectors that will be targeted under the GEF Project’s EnMS and ESO demonstration programme will include: (i) building materials (brick, cement and other input materials); (ii) iron and steel; (iii) non-ferrous metals; (iv) food processing; (v) agriculture; (vi) glass; (vii) breweries and distilleries; and (viii) numerous manufacturing sub-sectors including automotive vehicle production. When considering the geographic distribution of the EnMS and ESO demonstration plants to be established under the project, this will naturally follow the industrial distribution of South Africa. South African industrial enterprises are generally located within five regions, these being: (i) Gauteng i.e. Johannesburg and Pretoria; (ii) Durban; (iii) Cape Town; (iv) Port Elisabeth and (v) East London. The exception to this is mining, where operations can be located in various regions within the interior of the country as mineral deposits depict. In terms of the selected commercial sectors, see Annex H for a list of selected high energy intensity commercial sectors to be included. These commercial sectors have been selected based on initial experiences from the SA IEE Project as sectors with a considerable potential for energy saving and firm exhibited management commitments to implement EnMS and ESO measures. The sub-sectors will include shopping malls, airports, data centres and other large installations with significant energy use patterns.

The GEF Project’s PPG activities and the SA IEE Project PIA confirmed key assumptions of the PIF in that firstly there is a need for increased promotion of investment in EnMS and ESO, and secondly the presence of existing funding mechanisms completely negates the need for the GEF Project to establish its own dedicated financing mechanism. A concurrent theme identified was the need for

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<sup>8</sup> An Occupational Qualification consists of a specific combination of Knowledge Modules, Practical Modules and Workplace Modules, aimed at transferring particular skills to a learner. It is possible for a learner to opt to undertake selected modules independently from the rest of the qualification, as the modules are detailed enough to be able to transfer a significant set of skills, qualifying the learner to perform a specific body of work large enough to increase his/her employability. These are specific predetermined modules of the overall qualification that can be registered as a qualification in their own right, with them being referred to as “Part-Qualifications”.

additional support to both providers of finance and incentives, as well as the need to enhance the ability of industry to access finance support to implement EnMS and ESO.

EnMS and ESO initiatives (ESO, either undertaken under an enterprise's EnMS or independently as stand-alone projects) typically start with the low-cost or low hanging fruit. Those implemented under the SA IEE Project were/are generally a low-cost high-return investment in terms of energy and cost-savings for the enterprises. As an enterprise progresses with its EnMS and/or ESO programme, the individual EE and ESO projects become progressively more expensive and therefore, depending on the size of the company and its financial capacity and structure, exterior financing can be required to realize the more ambitious and capital intensive projects. This is especially evident in the SME sector where financial assistance can be required more early on to fund ESO, as well as general EE, projects under an established EnMS.

To promote EnMS and ESO investments and close the gap between projects and access to finance, the GEF Project will provide technical assistance to the MCEP (and other suitable large-scale financing mechanisms) to promote synergies and align efforts. As such, Component 4.0 addresses the need for increased investment promotion and addresses financial barriers to EnMS and ESO implementation through:

- a) EnMS and ESO Demonstration projects, with dissemination of energy and cost saving results through awareness raising activities under Component 5.0, to stimulate the demand for EnMS and ESO and associated services.
- b) Development of investment support and a match-making support mechanism/service within the National Business Initiative (NBI).
- c) Support to enhance access and evolve Government incentive mechanisms as well as FI/IFI financial packages/credit streams to include and better service industrial enterprises implementing EnMS and ESO measures.

Under Component 4.0, the GEF Project's sub-sector pilots, and the different industrial project development support activities, will provide enterprises with an incentive and ability to successfully approach the MCEP and other available funding mechanisms with project investment proposals of appropriate bankable quality, thereby creating a mutually beneficial relationship between the GEF Project and the MCEP (as well as other mechanism/credit facilities).

**Expected Outcomes:** Access to finance increased with the energy and cost saving benefits of EnMS and ESO proven within the South African industrial context with industry actively and progressively pursuing enhanced IEE.

**Output 4.1** *EnMS and ESO demonstration programme of 150 individual enterprises (50 large, 100 SMEs) across multiple industrial and selected commercial sectors*

Under this output the GEF Project will aim to work directly with approximately 150 industrial enterprises to implement combinations of EnMS and ESO initiatives that generate the best possible reductions in energy and GHG intensity. The EnMS and ESO demonstration programme will also focus on sharing the experience and results within the industry clusters and the entire industrial sector to stimulate the demand for IEE services.

In terms of setting and defining the rules for final enterprises selection, these will be elaborated during the inception phase but inter-alia it can be expected that the selection will be made under joint agreement by the NCPC-SA, SANEDI and the NBI. In regard to the selection criteria that will be applied for selecting the enterprises that will participate within the EnMS and ESO demonstration programme, the considerations are as follows:

- Enterprise potential for energy saving characterized by: (i) high inefficiency; (ii) high costs; and (iii) where energy costs form a high percentage of enterprise production costs
- Preliminary cost-benefits analysis
- Enterprise willingness to commit to long-term EnMS and ESO
- Existing enterprise commitments

- Enterprise readiness for to be part of information and knowledge sharing mechanisms
- Potential eligibility for incentives and associated financial mechanisms
- Supply chain replication potential

Where large enterprises are concerned, experience has shown that there can be significant IEE dissemination and replication scope for working with progressive companies who have extensive supply chains, as the host company often has considerable influence over their tier one and two suppliers in terms of Corporate Social Responsibility (CSR) functions and their energy performance in regard to the desire to reduce the GHG footprints of supplied components. This effect can be further amplified if the supplies are clustered around the host company. Examples of this are the car manufacturing companies in Durban and their local parts suppliers.

Under the SA IEE Project's EnMS piloting programme a small number of enterprise Energy Management teams were headed by or included women, therefore female inclusion and leadership of enterprise Energy Management Teams will be actively promoted through providing personnel capacity building support to reinforce the leadership and change management skills of women under all aspects of Energy Management Team functions.

Activities under Output 4.1 will include:

- Activity 4.1.1 Formulation of concepts for EnMS and ESO demonstration projects with consideration for different enterprise size classifications across different industrial and commercial sectors (including dissemination and replication potential factors such as clustering and contained value chains) and contained strategy for promoting female participation in, and leadership of, EnMS Energy Management Teams.
- Activity 4.1.2 Large enterprise EnMS and/or ESO implementation demonstration programme focused on heavily industrialized areas – with a target of 50 demonstration enterprises – linking to financial incentive mechanisms/credit lines where required and appropriate.
- Activity 4.1.3 SME EnMS and/or ESO demonstration implementation programme focused on, but not limited to, heavily industrialized areas – with a target of 100 demonstration enterprises – linking to financial incentive mechanisms/credit lines where required and appropriate.
- Activity 4.1.4 Post EnMS and ESO implementation technical support through twice-yearly on-site oversight/check-up sessions for EnMS implementation (with additional support sessions for SMEs as required) and ESO implementation follow-up advisory measures.
- Activity 4.1.5 Technical assistance to all EnMS and ESO demonstration enterprises on M&V of energy savings data.
- Activity 4.1.6 Development of enterprise EnMS and ESO demonstration project case studies and associated research/position papers.
- Activity 4.1.5 Development of an EnMS and ESO demonstration replication action plan.

**Output 4.2** *Support to industrial enterprises through a financial proposal advice/match-making support mechanism/service and other assistance programmes to assist access to, and understanding of, IEE private sector financing and Government financial incentive programmes*

The GEF Project will seek to integrate its EnMS and ESO demonstration and replication work and functionalities into the MCEP, as well as other relevant financial funds/mechanisms and FI/IFI finance requirements, through its activities under Output 4.2. Specifically, the GEF Project will establish an EnMS and ESO financial proposal advise and match-making support mechanism within the NBI, with assistance from the IFC, which will provide technical support to enterprises in developing bankable EnMS and ESO (as well as other EE projects) under formats and parameters that will facilitate funding from the different finance mechanisms and incentive schemes (see Section A.4.2). Developed concurrently with activities under Output 4.3, the financial proposal advice and match-making support mechanism within the NBI will provide technical assistance, guidelines and seminars for industry to align applications for finance or incentives with the applicable formats, content and design of different financial mechanism entry requirements and criteria. To assist in the

development and appraisal of project proposals, UNIDO's COMFAR (Computer Model for Feasibility Analysis and Reporting) tool will be deployed. COMFAR is a valuable aid in analysis of investment projects and can be used for the analysis of investments of new projects and the expansion or rehabilitation of existing enterprises. The GEF Project by working with the IFC will build in all relevant lessons and experiences of the CIPA and build on its existing relationships with private sector banks to expand financial sector understanding to incorporate EnMS and ESO. The training of experts and industry personnel to develop bankable projects and the entry criteria of the different funding mechanism will become a long-term function of the NCPC-SA, with support from the NBI. In this way, these funding mechanisms will actively support the EnMS and ESO demonstration and piloting activities of the GEF Project and their wide-scale replication across the industrial sector in South Africa over the long-term.

Activities under Output 4.2 will include:

- Activity 4.2.1 Establishment of IEE financial proposal advice and match making support mechanism within NBI with associated technical assistance and human capacity support.
- Activity 4.2.2 Guidelines for the development of bankable EnMS/ESO (and wider IEE projects).
- Activity 4.2.3 Capacity building seminars for experts and industry personnel on the following topics: COMFAR and other analysis tools for the evaluation of IEE opportunities; Government financial incentive criteria and the financing criteria of banks; development of bankable projects under EnMS and ESO;
- Activity 4.2.4 Development of initial EnMS and/or ESO proposals drawn for the demonstration programmes under Outputs 4.1.2 and 4.1.3. With up to 15 proposals for the large companies and up to 50 for the SMEs being developed and presented for consideration.

**Output 4.3** *Targeted technical support to FIs/IFIs and Government providers of IEE finance to develop, enhance access and evolve funding mechanisms, incentives and financial packages/credit streams for industrial enterprises implementing EnMS and ESO measures*

In line with the Output 4.2, the GEF Project will seek to promote and integrate its work and EnMS and ESO functionalities into the MCEP, as well as other relevant financial mechanisms and FI/IFI finance requirements through its activities. Conversely, to support these mechanisms and FIs/IFIs, the GEF Project will also provide technical assistance to the **dti** for the MCEP mechanism and the 12I tax incentive scheme, as well as to DoE for the 12L tax incentive schemes by participating in ongoing and future planned review processes to assist Government in evolving these financial incentive mechanisms of the Government departments reflecting developing national and international experiences and best-practices. New mechanisms may also be integrated into this work plan as they are developed. By doing so, the GEF Project will also help to secure the continuation and eventual expansion of these financial mechanisms – thereby promoting indirect benefits over the long-term.

To increase financing from local FIs, the GEF Project, working with the IFC and the NBI and building on the experiences of the CIPA programme, will establish guidelines and a training programme for selected bank staff on the appraisal and risk sharing profiles of EnMS and ESO IEE projects. The project will also provide assistance to participating FIs such as SASFIN Bank to further develop financial packages/credit lines suitable for EnMS and ESO IEE projects and in particular, loan facilities that can assist the SME sector access financing. In regard to the long-term capability to periodically update the IEE understanding and capacity of firstly Government financial mechanism staff and secondly banking sector staff, it can be expected that the appraisal and training tools developed under GEF Project will be embedded with the NBI, NCPC-SA, SANEDI and the **dti** itself where the MCEP is concerned. These institutions will be able to convene post-GEF Project IEE financing workshops and training events as the industrial and financing sectors require.

Activities under Output 4.3 will include:

- Activity 4.3.1 Analysis of national and international best practice of funding mechanisms, incentives and financial packages/credit streams IEE projects.

- Activity 4.3.2 Assistance in the analysis of Government financial incentives for IEE including: MCEP and the 12L (and 12I) tax incentive, making recommendations for improvement and evolution (in line with technical assistance provided under Activity 2.1.6 to strengthen incentives relative to EnMS and ESO).
- Activity 4.3.3 Guidelines for financial risk evaluation of EnMS and ESO IEE projects.
- Activity 4.3.4 Capacity building seminars for local FIs to better understand benefits and risks of investment in EnMS and ESO IEE projects (using Guidelines for financial evaluation of IEE projects developed in activity 4.2.3) with an emphasis on promoting the training of female banking staff.
- Activity 4.3.5 Targeted technical support and training to local FIs to develop capacity of staff on assessing eligibility for finance and risk sharing of IEE projects. This activity will include: three introductory workshops for 60 bank staff; two expert training workshops for 30 bank staff; and personal coaching of 15 bank staff, assuming 3-5 persons from each participating banks.
- Activity 4.3.6 Assistance to three local FIs to develop financial packages/credit lines suited to IEE investment and in particular EnMS and ESO.

### **Component 5.0: *EnMS and ESO Awareness, Promotion, Service Demand Generation and Lessons Sharing***

The objective of Component 5.0 is to build and expand the awareness of industry, selected high energy consuming commercial sub-sectors, Government, public sector institutions (such as universities and hospitals) and other relevant stakeholders with high energy and GHG footprints, of the potential financial, energy, and GHG emission savings that EnMS and ESO can deliver within South Africa. The core purpose of the component is therefore to build and accelerate the demand from industry for implementing EnMS and ESO, and the GEF Project's EnMS and ESO training and enterprise implementation support services as well as promoting the uptake of the different SANS/ISO50001 series of standards and the fulfilment of Government regulatory requirements and policy objectives. The component's approach to achieving this is an extensive project outreach and awareness programme designed and built on the experiences of the SA IEE Project and the lessons and findings of a Communications Audit/Evaluation undertaken during the PPG Phase.

The overall GEF Project awareness and communications programme will therefore have two main focus areas; firstly, the programme will focus on the promotion of the actual project itself so that industry and other relevant sub-sectors are aware of the GEF Project and its beneficial services. This will include ensuring a strong project branding programme that positions the GEF Project and its implementation partners as thought leaders in the field of IEE, EnMS and ESO nationally as well as internationally. Secondly, the awareness and communications programme will focus on building the awareness and the knowledge of industry and other relevant stakeholders on the EnMS and ESO methodologies themselves. This involves a three track strategy: firstly developing and disseminating EnMS and ESO articles and position papers (including South African and international EnMS/ESO case studies); secondly, hosting and participating in varied IEE seminars, workshops and events; and thirdly by aligning and integrating the awareness and communication programme objectives of the GEF Project to those of the **dti** and DoE (and SANEDI). In addition, the GEF Project will adapt its awareness and communication functions to actively include gender equality considerations to firstly ensure that the maximum level of female participation in the project's different training courses is achieved but also secondly that the GEF Project contributes to national efforts to promote gender equality in the industrial and engineering sectors.

**Expected Outcomes:** Enterprise management (across the entire South African industrial sector and selected commercial sectors) is aware of the potential financial, economic and climate change mitigation benefits that adopting EnMS and ESO can yield.

**Output 5.1:** *Holistic Awareness and Communications Strategy to increase awareness and showcase the benefits of implementing the EnMS and ESO methodologies*

Under this output the Awareness and Communications Strategy (Communication Strategy) for the GEF Project will be jointly developed by the project stakeholders under alignment to the **dti**, and DoE awareness and media objectives. The Communication Strategy will be based on the methodology developed under the SA IEE Project, but under an expanded and strengthened form by building in the different recommendations of the Communications Audit/Evaluation. The GEF Project Communications Strategy will therefore increasingly focus on using more mainstream media coverage with targeted messages aimed at getting the GEF Project recognized by a wider audience, as well as fostering relationships with relevant journalists and media outlets. It will also shift the project's awareness and outreach activities to more digital based media coverage as this was found to increasingly have more impact than printed media.

The Communications Strategy will also develop a targeted and measurable Public Relationship Plan with clearly defined audience, channels/publications, journalists and messaging scheduling, in order to establish benchmarks for setting and measuring media and communications objectives. The Communications Strategy and its contained activities will be fully aligned and integrated into Government policy outreach and awareness objectives so as to firstly embed the different messages of the GEF Project within wider institutional initiatives; and secondly, to provide technical and methodological detail as well as implementation experiences to Government events and other outreach activities. The Communication Strategy will be updated on annual basis to reflect changes in Government outreach and awareness objectives and as well as project developments. The strategy will communicate around gender issues and target new gender relevant stakeholders in communication efforts with it positively communicating on gender equality and women's role in the energy space and showcasing women's work. It will also facilitate dialogue on gender and energy efficiency articulating or supporting events on the topic.

Activity under Output 5.1 will include:

- Activity 5.1.1 Formation of a Communication Strategy Group (DoE, **dti**, SA-NCPC, SANEDI, UNIDO).
- Activity 5.1.2 Development (and annual review) of an inclusive Awareness and Communications Strategy. The strategy will be designed to effectively publicize the GEF Project and target industry managers as well as other stakeholder decision-makers on the benefits of adopting the EnMS and ESO methodologies and wider IEE in terms of the costs-benefits, efficiency and competitiveness improvements, as well as the positive image created through potential beneficial environmental impacts. The strategy will be developed under consultation with an appropriate sector women's body such as SAWIEN in order to formulate strategies to positively communicate on gender equality and women's role within the IEE, consulting and engineering space.

**Output 5.2:** *Communication and awareness outreach activities to promote uptake of policy frameworks, standards, learning circles, financing opportunities, training and capacity building activities and the EnMS and ESO*

Under this output the GEF Project will conduct a range of media, trade and industry awareness and outreach activities including: hosting and participating in industrial events and seminars/workshops; organizing EnMS/ESO pilot/demonstration site visits; co-sponsoring and participating in Government industry outreach and awareness events. The output will also produce a wide range of promotional and instructional materials both in terms of the GEF Project itself and the contained EnMS and ESO methodologies, with materials including: mass media and sector specific promotional advertisements (digital and print); promotional movies for TV and on-line content; specialist editorial pieces on the EnMS and ESO methodologies and the results of the project's demonstration programme; and tailored light self-help information packs to assist companies to quickly save energy under the national power constraint environment that South Africa has recently re-entered. Lastly, linking with Output 4.1, EnMS and ESO demonstration enterprise case studies will be packaged for widespread dissemination.

Activities under Output 5.2 will include:

- Activity 5.2.1 Host and participate in a series of EnMS and ESO awareness and promotion workshop and seminar segments as part of wider Government IEE outreach and awareness

initiatives for managers from industry (including sectors such as: iron and steel; non-ferrous metals; non-metallic minerals; chemicals; paper and pulp; textile; cement; automotive; manufacturing; mining and non-manufacturing industry; agriculture and agro-processing) as well as selected commercial sectors. Workshop and seminar messages will include built-in elements on promoting women's enhanced participation in EnMS and ESO.

- Activity 5.2.2 *Enterprise ESO/EnMS Quick Self-Help Guides* for companies to quickly begin the process of energy saving within the national power constrained environment, including short/lite guidelines for in-house EnMS and ESO awareness to disseminate IEE practices amongst enterprise staff.
- Activity 5.2.3 Establishment of peer-to-peer exchange platforms/networks/learning circles (including websites) within/for target industrial (and commercial) sectors as well as the hosting of information exchange events/working groups.
- Activity 5.2.4 An extensive set of gender sensitive/inclusive awareness raising and communications materials and editorial pieces associated with promotion of the GEF Project and its contained outputs/activities under all of its components (including: policy frameworks; ISO 50001 Series of standards; training and capacity building programmes; promotion of demonstration projects and IEE finance and incentives available) as well as technical editorials on the EnMS and ESO methodologies.
- Activity 5.2.5 EnMS and ESO demonstration case study packaging and dissemination.

### **Component 6.0: Project Monitoring and Evaluation**

This component will formulate the monitoring and evaluation mechanism, undertaking regular monitoring exercises and mid-term and final evaluations to facilitate successful project implementation and sound impact assessment. The evaluation process will be based on the "Theory of Change" approach to project consideration and evaluation. This approach is being adopted due to it being successfully employed in the SA IEE Project to map the projects development pathways and develop the questions that were examined and measured during its different evaluation processes.

The GEF Project will validate and expand its own 'Theory of Change' methodological approach during the inception following on from preliminary work conducted during the PPG Phase. The validation and expansion of the GEF Project "Theory of Change" will analyse the long-term goals and then map backwards to identify necessary preconditions as well as identifying appropriate evaluation questions, and the methods with which to investigate them. This process combined with the findings and recommendations an M&E Analysis of the SA IEE Project conducted during the PPG Phase will facilitate adaption as well as strengthening of the existing SA IEE Project Monitoring System into a format appropriate for the GEF Project with its additional partners and subject areas. The robust monitoring system that will therefore be put in place will facilitate in-depth and readily accessible data and project finding for planned evaluations and ad hoc requests from the Government and project stakeholders. A more detailed description of the GEF Project's M&E system and plan is given in Section C.

**Expected Outcomes:** The GEF Project is fully monitored and evaluated under periodic implementation assessment of impact, based on the 'Theory of Change' methodological approach

**Output 6.1** *Monitoring and evaluation (M&E) mechanism, in line with the Theory of Change approach and determined Key Performance Indicators, established with regular monitoring exercises conducted, and tracking tools prepared with periodic reporting*

- Activity 6.1.1 Project inception workshop within two months of project starting date.
- Activity 6.1.2 Validation and expansion of the GEF Projects 'Theory of Change' with regular updating in line with annual project review, complete with gender aspects and revised/validated approaches and their KPIs.
- Activity 6.1.3 Finalization of the project monitoring system with contained data collection and processing methods and corresponding tools, including components that will examine and monitor gender tracking functions on KPIs and other issues.

- Activity 6.1.4 Twice yearly (six-month) Project Progress reporting to the Project Steering Committee.
- Activity 6.1.5 Annual PSC Project Reviews.
- Activity 6.1.6 Special analysis/position/research papers/editorials on selected project aspects, such as gender impacts of EnMS for example.
- Activity 6.1.7 Results dissemination within and beyond the project intervention zone through existing information sharing networks and forums.

**Output 6.2** *Mid-term review and final project evaluations conducted, an evolving project 'Theory of Change' facilitated by M&E over the project's lifetime, with reviews, reports and post project completion impact assessment(s)*

- Activity 6.2.1 Mid-term review and updating of GEF Project's Theory of Change
- Activity 6.2.2 Independent Mid-Term Review at the mid-point of project implementation.
- Activity 6.2.3 Independent Final Project Evaluation will take place three months prior to the final PSC meeting

### **Global Environmental Benefits**

Each project component will have an impact, either directly or indirectly, on South African industrial energy use, consumption and GHG emissions. The GEF Project is expected to generate lifetime direct avoided GHG emissions of 3,281,200 tons CO<sub>2eq</sub> from the 150 demonstration projects. Lifetime indirect bottom-up avoided GHG emissions are expected to be 4,908,800 tons CO<sub>2eq</sub>, while top-down avoided GHG emissions are expected to be 20,325,000 tons CO<sub>2eq</sub>. Direct energy savings (converted to primary energy) have been calculated at 32,422,422 GJ. The direct emission reduction and energy savings figures are based on the actual experience and energy saving/GHG emission reduction results of the SA IEE Project's initial pilot EnMS and ESO programme, while the indirect emission reduction figure is based on different factors being examined under the evaluation processes of the SA IEE Project. The presented GHG figures given here, and assumptions that they are based on, can therefore be considered highly robust and are explained in more detail in Annex I.

Direct energy savings and GHG emission reductions will be generated through:

- a) The implementation of energy management systems and energy system optimization projects in the 150 demonstration enterprises (100 SMEs and 50 Large) to be executed under Component 4.0

Indirect energy savings and GHG emission reductions will be generated through:

- a) The enhanced regulation and supporting programmes for EnMS and IEE under Component 2.0 as well as enhanced financial incentives under Component 4.0;
- b) The enhanced expertise, skills, tools of local standards certification fraternity to offer Energy Audit (SANS 50002), Conformity Assessment (ISO 50003) and Energy Baselines and Performance Indicators (ISO 50006) related services as well as promotion of increased M&V and uptake of SANS50010 under Component 2.0;
- c) The enhanced expertise, skills, tools and overall IEE services offered by local IEE consultants trained under the different EnMS and ESO training programmes and activities under Component 3.0 as well as the staff of demonstration project enterprises under Component 4.0;
- d) The greater experience and confidence of commercial bank officers in lending for IEE investments, especially for selected type of EnMS and ESO investments that will be supported and promoted by the project;
- e) The enhanced capacity for preparation and better quality of IEE projects/investments proposals by local EE consultants and staff of enterprises trained under Component 4.0.

**A.6 Risks, including climate change, potential social and environmental risks that might prevent the project objectives from being achieved, and measures that address these risks:**

The overall GEF Project seeks to accelerate and expand the introduction of EnMS, the ISO 50001 Series of standards and ESO within the South African Industrial (and selected commercial) context with the main risk to reaching this objective being that the penetration rate of the project interventions alone does not facilitate the realization of the industrial energy intensity reduction targets set by the Government. The role that externalities may play is being taken into account. The South African Government and industry have realized the importance of EE in mitigating excess energy demand and GHG emissions and therefore they are fully engaged in regard to implementing increased IEE. This is especially important now as South Africa slips back into a period of national power constraint over the coming years, and industry is being pressed to make rapid and significant improvements in energy efficiency in order to relieve pressure on the national power grid. The SA IEE Project has shown that the EnMS and ESO methodologies have significant potential to improve IEE to the degree as outlined in the 2<sup>nd</sup> Revision of the NEES.

*Table Six: Summary of Risks and Mitigation Measures to be taken by the GEF Project*

<b>Risk Area</b>	<b>Risks</b>	<b>Level of Risk</b>	<b>Mitigation Measures</b>
Institutional Risks	Coordination between the <b>dti</b> and the DoE remains weak – with result of mixed messages to industry thereby resulting in enterprises not actively participating in the project.	Moderate	This risk will be substantially mitigated by: (i) Clear definition of roles and responsibilities of the <b>dti</b> and the DoE (and the NCPC-SA and SANEDI respectively) during project preparation and establishment of a Project Coordination Unit (PCU) to coordinate executing partners and major stakeholders during implementation. (ii) Establishing a Project Steering Committee (PSC) that sets out the institutional linkages among all stakeholders under a project governance structure.
Policy and Regulatory	Ministries do not show interest in facilitating a conducive environment for increased IEE.	Low	Government is widely committed to IEE and while difficulties due to inter and intra-departmental coordination are possible in regard to regulating the energy use of the South African industrial sector, demonstration of the benefits of EnMS and ESO measures in terms of increased national industrial competitiveness, increased job creation/retention, reduce national grid loading and reduced sector and national GHG emissions will continuously be packaged and promoted to the relevant parts of Government.
Industry and Market	Limited interest is solicited within industry to implement EnMS and ESO due to failures to understand the potential technical and financial benefits of implementing EnMS and/or ESO. Slow acceptance of the GEF Project’s EnMS and ESO enterprise support services results in late demonstration of the benefits of	Low	Industry demand for assistance in IEE will grow strongly because of firstly, the renewed national power constraint and the Government calls for increased IEE and secondly, rapidly rising energy costs. Furthermore, the UNIDO and NCPC-SA under the SA IEE Project has built a good reputation within industry on providing high quality training and enterprise technical implementation assistance on

Risk Area	Risks	Level of Risk	Mitigation Measures
	EnMS and ESO as well as SANS/ during the useful lifetime of the Project.		EnMS/ESO. Therefore the GEF Project will not be starting from scratch within industrial sectors and initial companies for the demonstration programme will have already been identified prior to the outset of the GEF Project implementation. Lastly, the GEF Project will work extensively with institutions like the Energy Efficiency Leadership Network under the NBI under its awareness and communications functions to continue to lobby industry and the commercial sector on the business, social and environmental case for adopting EnMS and implementing ESO.
Economic and Financial	Following, engineering-level personnel EnMS and ESO exposure, training, EnMS implementation and energy systems optimization assessments and reports, the management of enterprises might not be willing to invest in EE projects and technologies.	Moderate	Providing training/exposure for enterprises' key higher management level personnel to build their capacity to better understand the economic and financial value of investing in energy management and energy systems optimization. Provision of project preparation technical assistance and enhanced promotion and marketing of existing financing facilities through training for both banks and target clients.
Gender Risk	Risk of resistance against, or lack interest in, the project activities, with regard to the active promotion of gender equality.  Low participation rates by suitable female candidates and low female population within engineering fields.	Low	South Africa, while having a number of significant gender issues, is a pro-gender equality society. The GEF Project will however, pursue a thorough and gender responsive communication strategy and stakeholder involvement at all levels to ensure gender equality promotion to maximize the potential contribution of the project to improving gender equality in the IEE field.
Climate Change Risk	Climate change can significantly reduce industrial output in South Africa and therefore the need to increase IEE.	Not Applicable	Based on discussions with the South African Government and relevant experts, climate change does not yet present significant risks to South African industrial production levels within the time period of the project.

#### **A.7 Coordination with other relevant GEF financed initiatives**

The GEF Project will seek to realize mutual impact, enable synergies and avoid duplication and therefore UNIDO has already – and will continue in the future – to coordinate its efforts with initiatives undertaken by a range of non-governmental initiatives, including sector-specific organizations, IFIs and other GEF projects. The three GEF projects are considered below for direct coordination:

The GEF Project will seek to actively integrate aspects of the *GEF/UNIDO 'Promoting Organic Waste-to-Energy and other Low-carbon Technologies in Small and Medium and Micro-scale (SMMEs): Accelerating Biogas Market Development'* project. This project aims to promote market-based dissemination of integrated biogas systems in agro-processing Small, Medium and Micro-sized Enterprises (SMMEs) in South Africa through a combination of interventions at regulatory level,

market development, combined with specific investments as well as building the capacity of stakeholders. Of particular interest is the piloting/demonstration component which seeks to develop two pilot biogas installations with a combined capacity of 3.0 MW within agriculture and food-processing SME (and/or SMME) clusters and a replication portfolio of a further 6.0 MW of projects as well as an additional 25 viable organic waste to energy investment projects by the time of project closure. As EnMS and the SANS/ISO50001 standard require continual improvement, ultimately enterprises must consider the application of renewable energy solutions with this being explicitly stated in the standard. Therefore, considering these facts combined with an overlap of the some sectors targeted by both GEF Projects, considerable opportunities should exist to develop joint industry-biogas pilot installations through the GEF projects demonstration activities under Component 4.0.

The GEF Project will seek to exchange relevant aspects of EE improvement techniques, and their application, with the existing *GEF/UNIDO 'CleanTech Programme for SMEs in South Africa'* (CTSA) (as well as any additional follow phases of this project that be subsequently funded by the GEF). Specifically, one of the main focus areas of the CTSA is to enhance the entrepreneurial skill base in the SME sector regarding low-carbon technologies through professional mentoring. The engineering and energy profession experts that will be deployed and fostered under the GEF Project will be in a good position to fulfil this mentoring and advisory role, thereby increasing the national exchange and flow of energy and low-carbon know-how. Where possible, this inter-project cooperation will aim to further build the skill base of female participants as well as to provide female role models and mentors.

The GEF Project will seek to realize mutual impact enhancement, in particular regarding the *GEF/UNDP 'Market Transformation through Energy Efficiency Standards and Labelling of Appliances Project'*. There are potential areas for cooperation such as the Standards and Labelling project's awareness component, which will target appliance manufactures. The GEF Project will seek to integrate its message of reduced energy and production costs to appliance manufacturing enterprises. Another area of potential cooperation and synergy is the Standards and Labelling project's Monitoring and Evaluation capacity building programme within the DoE, where the GEF Project would seek to integrate its sectoral industrial energy consumption and intensity mapping component as well as aspects of the Energy Management Planning component into the monitoring and evaluation capacity building activities of the Standards and Labelling project. This would facilitate greater internal DoE alignment of mutually reinforcing components of these initiatives and strengthen their long-term functional sustainability within the DoE.

## **B. ADDITIONAL INFORMATION NOT ADDRESSED AT PIF STAGE:**

### **Stakeholder Consultations and Activities during the PPG Phase**

During the PPG phase activities, the key stakeholders from Government, industry and the private sector were identified, engaged and consulted on a number of project development activities. The purpose of these consultations was to update the project baseline, to ensure the relevance of project components and activities and to ensure the alignment of the project with Government priorities. The GEF Project's institutional arrangements were also examined and decided upon.

Consultation with key stakeholders took place during two institutional arrangement workshops, a large multi-stakeholder consultation workshop followed by a second large, multi-stakeholder validation workshop. An extensive series of stakeholder interviews and bilateral meetings were also conducted to gather further information on the GEF Projects final design, while close engagement with key stakeholders was maintained throughout the PPG phase to gather feedback and agreement on the Project's design. Feedback received from participating stakeholders through these consultation activities informed the GEF Project's implementation arrangements, and formulation of the project's framework, intervention logic and KPI targets.

In parallel with the GEF Project's development stage, an Environment Resource Management (ERM) team of evaluation consultants undertook a detailed Preliminary Impact Assessment (PIA) of the SA

IEE Project. The PIA provided a number of important lessons learned that have been integrated into the GEF Project's design.

### **Stakeholder Institutional Arrangements**

The PIA revealed important lessons learned regarding institutional arrangements of SA IEE Project. Most notably, the study revealed the need for more clearly defined roles and responsibilities that are understood and widely accepted within and between key stakeholders given the overlapping mandates of the DoE and the **dti** in terms of IEE. As such, a series of PPG Phase multi-stakeholder institutional arrangement meetings were held in order to define how the GEF Project should be executed by the government. It was agreed that the DoE and the **dti** should be joint Lead Implementing Departments under the GEF Project - as this was the most equitable implementation arrangement due to their shared mandate and responsibilities for IEE. The Project Steering Committee will therefore be jointly chaired by designated higher-level representatives (i.e. Chief-Director level) of the two departments.

A Project Coordination Unit (PCU) will be established to coordinate the daily implementation activities of the project, again consisting of two designated staff officers from the **dti** and DoE and two designated staff members of the NCPC-SA and SANEDI. An independent and UNIDO recruited International Project Coordinator will manage the PCU and coordinate executing partners and major stakeholders during the project's implementation under supervision and technical support from the UNIDO Project Manager. The PCU will consist of personnel either directly tasked or connected to the existing SA IEE Project to ensure continuity, knowledge retention and lessons learned application between the two projects.

The key categories of prospective stakeholders to be engaged during project implementation, and how they will likely be affected by, and benefit from, the GEF Project are outlined below. However, further refinement and clarification of roles may take place during the project's inception phase.

### **Stakeholder Categories**

- *Government departments* – Notably the DoE and the **dti**, which have not only introduced IEE policies and regulatory frameworks but will be equally responsible for the overall project agenda. The Department of Environment Affairs (DEA) will also be a key government stakeholder and recipient of technical assistance in line with GHG data collection, reporting and verification measures.
- *Government agencies* – Notably the NCPC-SA and SANEDI whom have a variety of responsibilities for assisting Government and enterprises with IEE initiatives as well as the training of EnMS and ESO experts and certification auditors and the administering EnMS and ESO courses. Other agencies include: The South African National Accreditation System (SANAS), South African Bureau of Standards (SABS), the Southern African Auditor Training and Certification Authority (SAATCA), as well as the Department of Higher Education and Training (DHE), Department of Science and Technology South Africa (DST).
- *Industrial (and selected commercial) enterprises* – This includes industrial enterprise owners and staff sub-categories such as managers, technician/engineers and machine operators.
- *Financial institutions and international financial institutions* – Prospective FIs include local banks, such as SASFIN Bank, that have dedicated credit lines and provide advisory services for IEE investments. IFI partners include the International Financial Corporation and German Development Bank (KfW) who provide on-lending finance facilities to local banks and other partners.
- *Training institutions and companies* – Prospective training institutions include a wide range of education establishments including: Universities of Technology; Further Education and Training (FET) Colleges; Private Training Providers and Workplace Training Providers.
- *EnMS, ESO and M&V practitioners/consultants* – This group includes those trained by the SA IEE Project and those to be trained under the GEF Project.

*Table Seven: Summary of Stakeholders and their inclusion in the GEF Project*

	<b>Stakeholder</b>	<b>Mandate and/or function in South Africa and for the Project</b>
<b>GEF Agency</b>	UNIDO	UNIDO is the implementing agency of the GEF Project. UNIDO will also perform coordination, technical support and oversight implementation functions under the GEF Project as well as performing procurement of the required international expertise inputs that national counterparts are not able and/or equipped to perform.
<b>National Executing Partners</b>	Department of Energy (DoE)	DoE is responsible for national energy policy; ensuring national energy (and electricity) security and supply, with the drive to increase national EE being a recently added mechanism by which to contribute to energy security and supply, to formulate and manage achievement of energy policies through the National Energy Efficiency Strategy (NEES) process. The DoE will be responsible for preparing and implementing relevant policies and regulations supportive of the implementation of the GEF Project.
	The South African National Energy Development Institute (SANEDI)	SANEDI is a Schedule 3A state owned entity that was established as a successor to the previously created South African National Energy Research Institute (SANEDI) and the National Energy Efficiency Agency (NEEA). The main function of SANEDI is to direct, monitor and conduct applied energy research and development, demonstration and deployment as well to undertake specific measures to promote the uptake of Green Energy and Energy Efficiency in South Africa.
	Department of Trade and Industry (dti)	The <b>dti</b> is responsible for the industrial sector under the objective of promoting structural transformation towards a dynamic and globally competitive economy that promotes industrial development, increased investment and employment creation. The <b>dti</b> is a key beneficiary to build capacity to formulate and manage effective best-practice support structures and incentives that encourage use of IEE. The capacity of the <b>dti</b> to play a major role in the GEF Project's implementation to facilitate investment support for the industry, communication and trade barrier removals will be both central and essential.
	National Cleaner Production Centre of South Africa (NCPC-SA)	The NCPC-SA is a national programme of the Government of South Africa that promotes the implementation of resource efficiency and cleaner production (RECP) methodologies to assist industry to lower costs through reduced energy, water and materials usage, and waste management. It is hosted by the Council of Science and Industrial Research (CSIR) on behalf of the <b>dti</b> . The NCPC-SA is a member of the UNIDO/UNEP 'Global Resource Efficiency and Cleaner Production Network (RECPnet)' and plays a leading role in the African Roundtable on Sustainable Production and Consumption (ARSCP). The NCPC-SA is the national implementing partner for the SA IEE Project, under which the NCPC-SA has built up a considerable level of industry creditability as a provider of the highest quality training and technical assistance for EnMS and ESO.
<b>Other Project Partners</b>	Department of Environment Affairs (DEA)	Under the mandate of the DEA, the South African National Climate Change Response Strategy (NCCRS) outlines the institutional frameworks and linkages concerning the energy sector, industrial energy consumption and climate change. Under the GEF Project the DEA will be a recipient of technical assistance to undertake assessment of GHG emissions in industry and alignment of energy and GHG emissions industrial enterprise reporting structures between DEA, DoE and the <b>dti</b> to strengthen the coordination of activities in line with target setting and reporting requirements of national GHG emissions, the NCCRS, and national communications to the UNFCCC.
	National Business Initiative (NBI)	The NBI, is a business collective, which aims provides the progressive leadership and advocacy roles needed in South Africa to support and accelerate business action to achieve a sustainable, equitable and thriving society. The NBI's mandate ranges from strategic public policy intervention to demonstrating the business case for action, from practical projects on the ground to high-level partnerships. The NBI is one of close to 60 global regional partners to the World Business Council for Sustainable Development (WBCSD) and the focal point of the UN Global Compact (UNGC) Local Network in South Africa, and aims to create opportunities for its members to not only access international best practice but also influence global thinking. Lastly the NBI is secretariat for the Energy Efficiency Leadership Network (EELN) which aims to promote energy efficiency in the broader South African business sector through a platform for knowledge sharing and capacity development.

	<b>Stakeholder</b>	<b>Mandate and/or function in South Africa and for the Project</b>
	Department of Higher Education & Training (DHE)	The DHE is the Government department responsible under the Further Education and Training Act and the National Qualification Framework Act (NQF Act) for matters related in providing Further Education Training (FET) college education training courses. As vocational level EnMS and ESO training modules will be developed for inclusion into the South African Higher Education Curriculum, the DHE will provide management of this process via qualification level dispensations and related matters, as well as for qualifications and quality assurance. Furthermore, under its mission statement, the DHE focuses on the reduction of skills bottlenecks, especially in priority and scarce skills areas which includes energy management and EE related skills and training. Correcting distributions of post-school education in this regard is addressed through extra dispensation through Sector Education and Training Authorities (SETAs).
	South African Qualifications Authority (SAQA)	The SAQA administers the NQF Act. Therefore, SAQA will be engaged with the GEF Project through its responsibilities to ultimately administer the two Occupational Qualifications and the recognition of the EnMS and ESO course modules under the NQF.
	Sector Education and Training Authorities (SETAs)	SETAs provide crucial functions under the DHE to manage skills development in a number of strategic sector skills planning. SETAs provide sector focused learning programmes and grants for skills development. Different SETAs will be engaged under the GEF Project implementation, in particular the Energy and Water SETA (EWSETA), whose main area of focus is energy, renewable energy, gas and water services sector. EWSETA will ensure the adherence of administrative procedures of the GEF Project's NQF Occupational Qualifications activities.
	South African Bureau of Standards (SABS)	SABS is the national institution established by the <b>dti</b> for the promotion and maintenance of standardization and quality in connection with commodities and the rendering of services. The SABS is a partner and key beneficiary of the GEF Project. The GEF Project will continue building the capacity of the SABS with focus on the auditing sector as a whole so as not to cause market distortion or unfair advantage. In turn, through its responsibilities, the SABS will be delivering the relevant SANS/ISO5000 Series delivery services.
	South African National Accreditation System (SANAS)	SANAS is the statutory National Accreditation Body that gives formal recognition that Certification Bodies, Inspection Bodies, Proficiency Testing Scheme Providers and Good Laboratory Practice (GLP) test facilities are competent to carry out specific tasks.
	Southern African Auditor & Training Certification Authority (SAATCA)	SAATCA's mission is to recognize and satisfy the needs of stakeholders in Southern Africa and provide confidence to industry by setting criteria in line with National and International Standards to ensure the competence of: (i) Management System Auditors and Product and Process Auditors; and (ii) Management System auditing Training Course Providers. SAATCA's duties are to implement, administer and control a scheme for the certification of quality system auditors and lead auditors. This role include two main focus areas: (i) inter alia, establishing and controlling procedures for the practical training of auditors, the accreditation and monitoring of organizations offering Quality System Auditor training courses with associated monitoring of the syllabus of training courses; and (ii) inter alia, the establishment and control of written examinations to determine competency of auditors and lead auditors, grading and re-grading quality system auditors and lead auditors and the appointment of certification boards. Under the GEF Project SAATCA has a lead role in all aspects of the training of certification auditors under SANS/ISO50001 and its supporting series of standards.
	South African Women in Energy Network (SAWIEN)	SAWIEN is a networking organisation focused on bringing together women in the energy sector to foster entry by other women into the energy space and their advancement by capacity building, information sharing and creating a network of worthwhile contacts.

	<b>Stakeholder</b>	<b>Mandate and/or function in South Africa and for the Project</b>
<b>Additional Stakeholders</b>	Business Unity South Africa (BUSA)	BUSA mandate is enable organized business to play a constructive role within the context of South Africa’s economic growth, development and transformation goals, in achieving an environment in which businesses of all sizes and in all sectors can thrive, expand and be competitive both nationally and internationally to the benefit of the South African economy as a whole. BUSA is envisaged to play a role under the GEF Project by representing the private sector in the public policy formulation processes as well as acting as a communicator, advocating industry to implement energy efficiency best practices.
	NGOs	The project may engage with relevant NGOs identified through the projects inception phase activities.
	Civil Society Organizations (CSOs), including Women organizations	CSOs active in the IEE field, such as the Africa-EU Energy Partnership (AEEP),’ and Christian Aid. Representatives from these organizations will be invited to participate in training programmes under Component 3.0 with the objective to strengthen their capacity in EnMS and ESO and reinforce promotion between their constituencies and clients. The GEF Project will also ensure that gender perspectives are integrated throughout project activities by regular engagement with key relevant women’s associations such as the African National Congress Women's League (ANCWL), the Businesswomen's Association of South Africa (BWASA), the Federation of South African Women (FEDSAW or FSAW) and Women in Oil and Energy South Africa (WOESA).
	Indigenous Peoples	Through the projects activities engaging with industry and industry personnel, namely Components 3.0, 4.0, 5.0 and 6.0, the project will engage with local stakeholders that may include Indigenous Peoples. The GEF Project will seek the full and effective participation of Indigenous Peoples in the identification, development, implementation, monitoring and evaluation of all relevant project activities. In addition, the GEF Project will be guided by the policies for Indigenous Peoples engagement of the Government of South Africa.
	GEF Agencies	GEF Agencies currently implementing GEF climate change mitigation projects in South Africa will be consulted and invited to participate during inception phase activities. In particular, the project will explore synergies and share information with GEF Agencies currently implementing energy related projects, including the UNDP.

## Project Management

UNIDO will be responsible for the overall implementation, management, and monitoring of the GEF Project, as well as reporting on the project’s performance to the GEF. Taking into consideration discussions with project partners, their capacity constraints and the intended level of technical and capacity assistance that the project will provide, UNIDO will also be in charge of procuring the international expertise needed to deliver the outputs planned under the six project components. UNIDO will supervise and monitor the work of the international (and national) task teams and ensure that deliverables are technically sound and consistent with the requirements of the project.

A Project Steering Committee (PSC) will be established and will consist of representatives from: UNIDO, the **dti**, DoE, the DEA GEF FP Office, NCPC-SA, SANEDI, SECO, NBi and BUSA. Gender focal points from relevant ministries, key large industries, banks and other relevant bodies will also be invited on an ad-hoc basis as required. As mentioned earlier, the PSC will be jointly chaired by designated higher-level representatives of the two joint Lead Implementing Departments of the **dti** and DoE.

The PSC will be set up to provide advisory inputs for the project. The PSC will meet twice per year to review the implementation progress and confirm the work plan for the subsequent year and any changes as per six months. Any changes/amendments proposed to the project and/or to the AWP and budgets by the Project Steering Committed are done in accordance with the approved project document, the GEF policy C.39/Inf.09, and UNIDO rules and regulations. Minutes of meetings will be signed by UNIDO and the PSC Chairperson(s). The final composition of the PSC will be decided during project inception. Representatives from other multi-lateral organizations, relevant line ministries and programmes may also be invited to the steering committee meetings on ad-hoc basis, depending on their involvement in the project. The institutional and project management arrangements are shown below in Figure Two. Under the institutional and arrangements the project components are assigned under Working Groups (WGs), where each WG will have a team assigned to

it made up from personnel for the relevant institutions and partners. For each WG either a single government Department, or a combination of Departments (DoE and **dti**), will adopt the leading roles in terms of coordination and support to the contained activities.

The Project Coordination Unit (PCU) will consist of an International Project Coordinator, an administration and finance assistant, with designated staff representation from the NCPC-SA, SANEDI, the **dti** and DoE. Higher level and additional administrative, financial, procurement functions will be provided by UNIDO HQ in Vienna, Austria. The PCU will be supported substantively by the UNIDO Project Manager and supporting UNIDO Units, such as the Evaluation Office of UNIDO and UNIDO's Gender Unit where gender support is required.

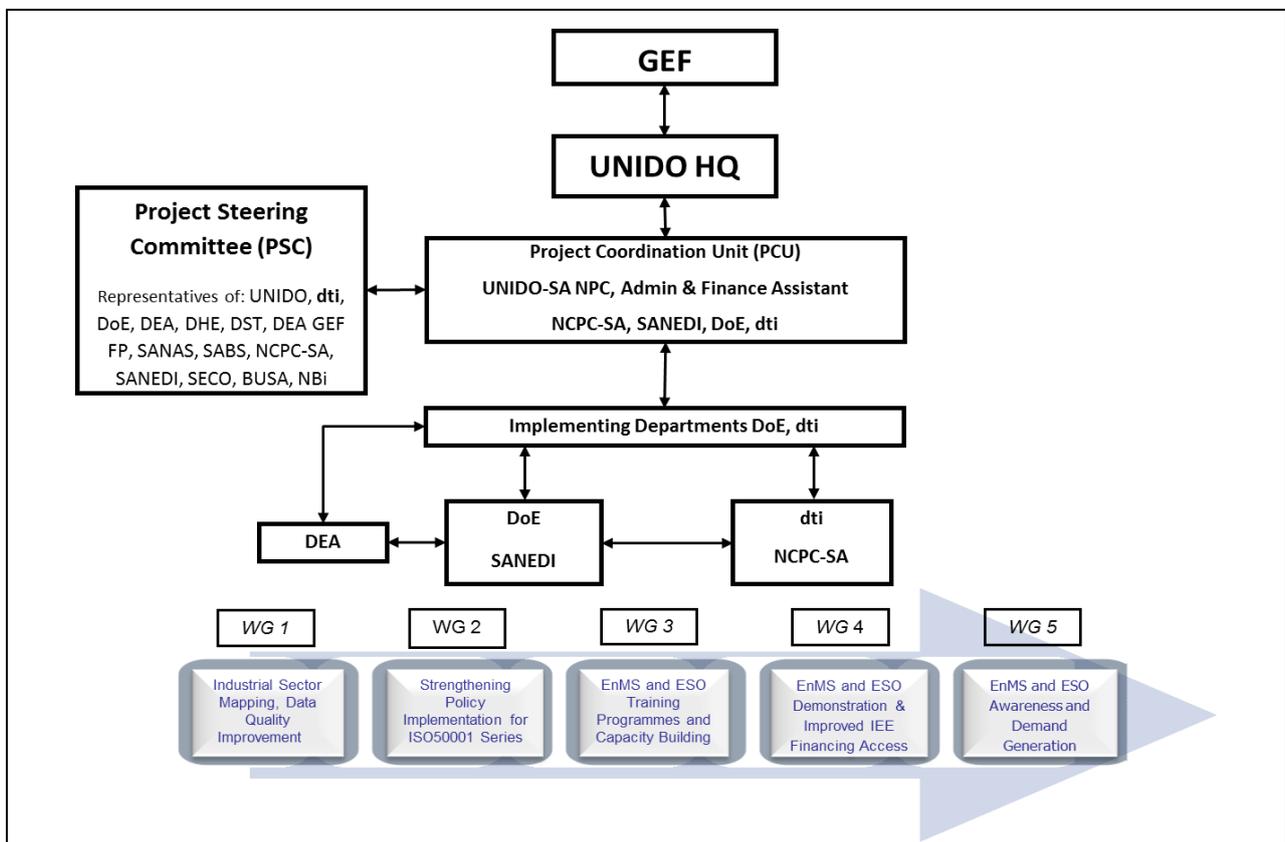
In terms of reporting, the PCU under the supervision of the UNIDO HQ Project Manager will be responsible for providing the following reports:

- Half-yearly progress and financial reports (in consultation with PSC)
- Half-yearly work plan tracking, updates and budgeting (in consultation with PSC)
- Annual progress reports (in consultation with PSC)
- Annual project implementation reviews (in consultation with PSC)
- Periodic thematic reports (as and when required by UNIDO)
- Technical reports (as prepared by engaged experts/sub-consultants)
- Project publications (as prepared by engaged experts/sub-consultants)
- Project Terminal Report.

The PCU will provide all related information to the evaluation experts for both mid-term review and final evaluations.

In regard to the executing partners, the **dti** and DoE will be the Government institutions responsible for the overall national project intendency and the coordination of Government institutional work and activities. Together with the NCPC-SA and SANEDI, the **dti** and DoE will be leading and executing the vast majority of the substantive work to be performed under the GEF Project.

*Figure Two: Institutional and Project Management Arrangements*



**B.2 Describe the socioeconomic benefits to be delivered by the Project at the national and local levels, including consideration of gender dimensions, and how these will support the achievement of global environment benefits (GEF Trust Fund/NPIF) or adaptation benefits (LDCE/SCCF):**

**Socioeconomic Benefits**

In the face of South Africa's continued energy challenges, and the renewed power constraint that the country faces for the next five years, enhancing IEE and energy saving is crucial for the overall socioeconomic development of the country. The adoption of IEE measures, in particular EnMS and ESO promoted by the SA IEE Project, has been demonstrated to be one of the most cost effective ways in which to reduce energy demand and production costs thereby increasing profitability and commercial competitiveness. At the same time the application of the two IEE methodologies can generate significant GHG emission reductions thereby offering a meaningful mechanism for policy-makers and private sector enterprises to mitigate climate change.

The GEF Project supports economic growth and poverty alleviation pursuing economic growth in a sustainable manner. In line with Government policy on inclusive employment, the project will include measures that ensure socially and economically inclusive employment as a key driver to contribute to government efforts to alleviate poverty within the majority population and to ensure long-term social stability.

At the enterprise level, the adoption of EnMS and ESO will increase their productivity, competitiveness and profitability and enhance the ability of enterprises to survive and grow in the face of rising energy prices and a competitive international environment, thus contributing to the development of the national economy. Energy cost savings, and thus enterprise expenditure savings, can help save companies from closure and can be used for investment in expansion, further efficiency gains and other useful purposes.

The GEF Project will also have a significant impact at the individual stakeholder level. Firstly, increased job security is a result of project interventions for those employed by a company participating in an EnMS or ESO programme. Those who participate in training programmes will benefit from enhanced technical capacity and knowledge, increased job security, increased employability, and possible increased income levels. The PIA of the SA IEE Project identified a number of intangible benefits and multiplier effects through the broader educational impacts of the project and resulting from exemplary behaviour towards energy saving and exposure to awareness raising initiatives. Ultimately, the message of EE is being taken home by employees and applied in their own homes. The GEF Project will also contribute to other local co-benefits such as reduced local air pollution.

Under the PPG Phase, in conjunction with the evaluation process of the SA IEE Project, a study on the socioeconomic benefits of implementing EnMS and ESO at selected pilot enterprises was conducted to examine the how the realized energy and enterprise cost savings translated into increased employment (as well employment retention) and economic spill over effects into enterprise supply chains and surrounding communities. This report is presented in Annex L.

The study found that out of the six enterprises analyzed, four were able to demonstrate both direct employment benefits results and wider community employment and economic benefits from the SA IEE Project's EnMS and ESO pilot assistance. The most striking example is provided by the Hot Rolled Steel producer Arcelor Mittal Saldanha Works (AMSW) in the Western Cape, where an investment of US\$ 50,000 by the management has yielded approximate annual savings of US\$ 12 Million per year by the end of 2014. The production cost saving represented the first profits the company had made within three years and help stave off the closure of the plant. This safeguarded the jobs of 1,237 direct employees, with a further 3,180 jobs/livelihoods being protected throughout AMSW's supply chain and the surrounding communities from which the plant draws its workers.

## Consideration of Gender Dimensions

### ***Gender Mainstreaming at UNIDO***

UNIDO recognizes that gender equality and the empowerment of women has a significant positive impact on sustained economic growth and inclusive industrial development which are key drivers of poverty alleviation and social progress. Commitment of UNIDO towards gender equality and women's empowerment is demonstrated in its policy on *Gender Equality and the Empowerment of Women (2009)*, which provides overall guidelines for establishing a gender mainstreaming strategy that:

- Ensures that a gender perspective is reflected in its programmes, policies and organizational practices;
- Advances the overall goal of gender equality and the empowerment of women, particularly the economic empowerment of women;
- Benefits from the diversity of experiences and expertise within the United Nations system to advance the internationally agreed development goals related to gender equality and the empowerment of women;
- Accelerates the Organization's efforts to achieve the goal of gender balance, in particular at decision-making levels.

In regard to the energy efficiency operational level, UNIDO developed and published the "*Guide on Gender Mainstreaming - Energy and Climate Change Projects*" (2014), which provides guidance to the gender mainstreaming of its sustainable energy programmes and initiatives at all stages of the project cycle. In addition to introduction of basic concepts and strategic approaches, it also includes tools that can be used at relevant points of the project cycle to guide the thought processes and activities. These tools include:

- A gender categorization tool, which assesses how much direct impact the project will have on gender dimensions;
- A gender mainstreaming check list, which summarizes key considerations which must be considered during project development;
- A gender analysis tool which provides specific questions that can guide the project developer in considering gender dimensions of a project, before full gender analysis is conducted by an expert;
- A gender mainstreaming the project cycle tool, which lists key activities to be considered at each step of the project cycle;
- A gender indicator framework that encourages results based management by indicating potential gender dimensions and quantitative indicators for specific energy interventions.

To ensure that all projects consider gender dimensions from inception, UNIDO has also integrated a robust gender review as part of the project appraisal process both at technical and organizational level. The gender guidelines for the Energy and Climate Change Branch within UNIDO, from where this GEF Project is managed, are established and a Gender Team is in place to support gender related efforts. The planning and formulation process for the GEF Project has been an opportunity to discuss gender issues as GEF and UNIDO have a clear commitment on gender equality.

### ***Gender Dimensions of the GEF Project***

In South Africa, the Government is obliged, by both international and national legislative and policy frameworks, to integrate gender issues and engage women in all policies and processes, including industrial energy efficiency matters. South Africa also requires improved energy management and skilled professionals in the field to create sustainable economic and social infrastructure. As such the increased participation and representation of women in IEE is considered as highly advantageous. However, to date women's involvement in the design and implementation of IEE strategies and initiatives has been marginal, both at the institutional level and at the enterprise level.

It is important, therefore, to advance women's participation in, and influence on, the field of IEE. This speaks to the need to build women's knowledge and capacity on the subject, while ensuring support

and mentorship structures to sustain women in IEE are put in place. It also calls for efforts aimed to remove the obstacles preventing the promotion of gender equality and women's empowerment in the field. Finally, it is necessary to showcase and promote women as agents of change and to build the institutional capacity for gender sensitive governance and policy development and implementation.

IEE projects are typically classed as gender neutral or with limited gender dimensions and entry points for gender mainstreaming activities. However, the experience of the SA IEE Project and the EnMS methodology itself does not necessarily subscribe to this scenario and presents a significant opportunity for gender mainstreaming. As such, building on the work of the SA IEE Project, the GEF Project has the potential to contribute significant gains in terms of gender equality within the IEE field in South Africa. For example, Certification Auditing under the SANS/ISO 50001 standard, and its series of supporting standards, is identified as a new area of business and presents considerable potential for women to participate and improving gender equality within the IEE field in South Africa. As such, the approach to gender mainstreaming taken within the GEF Project has the potential to become a model for other IEE initiatives in the country and worldwide as there is very little experience in this regard.

Therefore, regardless of IEE project gender categorization, the GEF Project has potential to contribute to reversing gender inequalities and the project's partners and stakeholders have supported the integration of realistic and achievable gender equality and women's empowerment related targets within the project's components, with clear and measurable key performance indicators being set. The gender mainstreaming process that the GEF Project intends to put in place, and the products that it will deliver, are highly pioneering and innovative because:

- It is not possible to speak of sustainable development and economic prosperity, if gender discrimination and inequality persist in South Africa;
- Documenting, analyzing and raising awareness on the gender dimensions of IEE under the GEF Project will bring insights to these areas of work and will open potential opportunities for new perspectives and extended impacts, both in South Africa and beyond.

As part of the preparatory activities for the GEF Project, a gender analysis and assessment was undertaken (based partly on the SA IEE Project's experiences) to provide gender mainstreaming recommendations for the GEF Project. Refer to Annex K for the '*Gender Analysis and Assessment Report*' for full details.

Based on the '*Gender Analysis and Assessment Report*', gender entry points were identified and specific corrective actions were recommended to ensure that gender considerations were effectively embedded in the GEF Project's design. As such the GEF Project has integrated gender perspectives throughout its design and proposed activities; for example, efforts will be made to make the expert training programme available to equally qualified female candidates and will target as a minimum target for the training, relative to the employee ratios within assisted enterprises and institutions. Efforts will also be made to make the training accessible to women for example, adequate day times for women participation, locations easily accessible. The GEF Project will regularly engage with key relevant women's associations such as the African National Congress Women's League (ANCWL), the Businesswomen's Association of South Africa (BWASA), the Federation of South African Women (FEDSAW or FSAW) and Women in Oil and Energy South Africa (WOESA); and the South African Women in Energy Network (SAWIEN) will be invited to be a member of the GEF Project's PSC. Additional gender mainstreaming features of the GEF Project are shown below in Figure Three.

The Gender Mainstreaming design process will be validated and completed under an additional UNIDO Gender Mainstreaming exercise within the Inception Phase process, where this point an action plan will be developed allocating the required resources and responsibilities to the reach the defined gender outputs and targets.

*Figure Three: Additional Gender Mainstreaming Features of the GEF Project*

#### GEF Project Implementation

- **Policy** - (i) Collection of sex disaggregated baseline data; (ii) In-depth gender sector context; (iii) Mapping of gender relevant partners, counterparts and stakeholders; (iv) IEE Gender based needs assessments; (v) development policy enhancement tools.
- **EnMS/ESO Training Materials** - (i) Highlighting of positive female roles in IEE; (ii) Highlighting agent of change role of women and career development potentials of EnMS/ESO.
- **EnMS/ESO Training Course Provision** - (i) Active promotion of the different EnMS/ESO/Standard training courses through women's advocacy and professional bodies; (ii) Adapted gender and family sensitive training schedules and facilities; (iii) Training incentivization to enterprises to field additional female candidates; (iv) Agent of change role of women highlighted; (v) Mentoring of female EnMS/ESO candidates; (vi) Female Energy Management professionals role model promotion; (vii) Training of NQF EnMS/ESO female trainers.
- **EnMS/ESO Demonstration and Financing** - (i) Female inclusion and leadership of enterprise Energy Management Teams will be actively promoted; (ii) Agent of change role of women highlighted; (iii) Promotion of the inclusion of female banking staff and Government Incentive Officers under IEE financial proposal evaluation methodologies.
- **Project EnMS/ESO/IEE Awareness and Communications** - The GEF Project will adapt its awareness and communication functions to actively include gender equality considerations to ensure that the maximum level of female participation in the project's different training courses is achieved and that the GEF Project contributes to national efforts to promote gender equality in the industrial and engineering sectors. The Project's internal and external Awareness and Communications Strategy will communicate around gender issues, with it positively communicating on gender equality and women's role in the energy space.

#### Gender M&E Functions

- Detailed gender baselines, gender targets and indicators will be established with the intent of measuring progress in reaching gender outcomes/outputs over time and in mainstreaming gender at the project's implementation and organisational levels using both qualitative and quantitative gender indicators
- Documentation and dissemination of lessons learned on the gender mainstreaming process (and in regard to the gender equality potential of the EnMS methodology itself) to inform national and international stakeholders

### **B.3. Explain how cost-effectiveness is reflected in the project design:**

Improved IEE through EnMS and ESO has proven to be a highly cost effective method of improving industrial energy performance as well as reducing associated GHG emissions and thereby combating climate change. Initial experience from the SA IEE Project has shown that the two IEE methodologies, along with the ISO 50001 Energy Management standard, are highly applicable within the South African industrial sector (and selected commercial sectors) with significant potential for further expansion and mainstreaming in order to improve sectoral energy performance, specially:

- EnMS is the best proven methodology to ensure integration of EE in daily business practices and continual improvement of energy performance;
- Investment in EnMS is a “low cost-no cost” solution to IEE with little to no investment in hardware necessary.
- Energy system optimization approach provides three-five times larger energy savings than that of a system component approach;
- Payback periods for many initial ESO projects and many measures taken under an EnMS are less than 18 months often with limited capital requirements.

Therefore, the GEF Project will continue the promotion of EnMS and ESO, as these two methodologies represent the best-available and most cost-effective energy reduction measures and technology solutions relevant to the South African industrial sector. Beyond the EnMS and ESO methodologies themselves, the GEF Project will achieve cost effectiveness through a focus on

sustainability which is achieved through the creation of suitable market conditions and removal of barriers. Therefore, the GEF Project has incorporated considerations of cost effectiveness, sustainability and replication, throughout its design and it can be expected that the combination the project's policy, standards, capacity building and market development as well as awareness and communications activities can be anticipated to have a major multiplying effect over the medium- and long-term. Across the GEF Project cost-effectiveness is reflected in the following ways.

The technical assistance that will be provided under Component 1.0 and 2.0 will assist Government to foster data rich policy and regulatory evolution and strengthened implementation tools, as opposed to developing new/additional measures. The further introduction and promotion of the ISO50001 Series under Component 2.0 also offers one of the most cost-effective methods of promoting energy efficiency both in industry and other sectors. Under Component 3.0, the ultimate goal of the project is to foster a commercial training market where EnMS and ESO training is provided by private sector Training Providers competency accredited under the NQF Occupational Qualifications. The GEF Project will develop a wide-range of EnMS and ESO modules for final inclusion under the commercially viable NQF Occupational Qualifications, while also providing EnMS and ESO training courses to ensure that a trained industry and expert consultancy base is available to implement EnMS and ESO measures.

Under Component 4.0, the EnMS and ESO demonstration activities that will be conducted in participating host enterprises (both large and SME) will result in highly cost-effective solutions for the companies involved (see Annex L for a selected accounts of pilot enterprise EnMS/ESO results from the SA IEE Project in terms of return of investment, as well as cost and energy savings). Through, detailed case studying and their dissemination, along with strengthened Government IEE policy and regulatory initiatives, the GEF Project's demonstration plants will provide significant motivation to other industrial enterprises to adopt EnMS and ESO as well as take up the SANS/ISO50001 standard.

Cost effectiveness is further exemplified in the GEF Project's design under Component 4.0 through the leveraging of existing Government financing mechanisms and incentives as well as developmental and commercial based loan package options for IEE in South Africa. The existing financing mechanisms and incentives such as the MCEP and the 12I and 12L tax incentives, as well as private sector finance from FIs and on-lending from IFIs, means that the GEF Project avoids the need to directly invest in EnMS and ESO demonstration through establishing an enterprise financing mechanism for equipment.

The GEF Project will instead provide its demonstration enterprises with EnMS and ESO implementation technical assistance while also supporting them to develop suitable and bankable financial proposals to access the existing financing mechanisms and products. The GEF Project will increase access to suitable finance for EnMS and ESO measures through the establishment of a match-making mechanism/project proposal clearing house for EnMS and ESO investments as well as activates to increase the alignment of, and access to, private sector finance and Government incentives such as the MCEP, 12I AND 12L. At the same time the GEF Project will provide capacity building the different existing financing mechanisms and bodies to evolve their operations and financing packages in order to increase access to IEE financial services (with a focus on EnMS and ESO) for enterprises in the long-term.

Lastly, under Component 5.0 lessons from the evaluation of the SA IEE Project's awareness programme will ensure that the GEF Projects awareness and communications programme are designed to use formats that will maximize exposure and Advertising Value Equivalent (AVE). The dissemination of the case studies from the EnMS and ESO demonstration activities will highlight the benefits of investing in the methodologies through industry awareness raising activities resulting in enhanced and demand for EnMS and ESO.

The GEF Project is expected to generate cumulative Direct GHG emission savings of 3,281,200 ton CO<sub>2</sub>eq and Indirect bottom-up GHG emission savings of 3,780,800 ton CO<sub>2</sub>eq and top-down GHG emission savings of 20,325,000 ton CO<sub>2</sub>eq. Considering the total GEF Project Trust Fund grant value of US\$5,776,484, GEF resources cost-efficiency for the expected Direct GHG emission savings is therefore 1.76 US\$/ton of CO<sub>2</sub>eq. By considering expected Direct GHG emission savings along with the estimated Indirect GHG emission savings in regard to the top-down and bottom-up scenarios, an estimated GHG emission savings cost-efficiency range of 0.66 US\$/ton CO<sub>2</sub>eq to 0.24 US\$/ton CO<sub>2</sub>eq is yielded.

### **C. DESCRIBE THE BUDGETED M&E PLAN:**

Project monitoring and evaluation (M&E) will be conducted in accordance with established UNIDO and GEF procedures with additional level of consideration under the ‘Theory of Change’ methodology. The M&E activities are defined by Project Component 6.0 and the concrete activities for M&E that are specified and budgeted in the M&E plan. Monitoring will be based on indicators defined under the Theory of Change and listed in the strategic results framework (which details the means of verification), as well as in annual work plans. M&E will make use of the GEF Tracking Tool, which will be submitted to the GEF Secretariat three times during the duration of the project: at CEO Endorsement, at mid-term review, and at final evaluation.

UNIDO as the GEF Agency will involve the GEF Operational Focal Point and project stakeholders at all stages of the Project M&E activities and the validation, expansion and revision of the project’s Theory of Change to ensure the use of the evaluation results for further planning and implementation.

#### ***Internal Tracking***

**Project Inception Phase** - A project Inception Workshop (IW) and a Theory of Change validation and expansion session will be held within the first two months of project’s starting date involving all relevant project stakeholders. The IW and Theory of Change session will be very important for consolidating partners’ and beneficiaries’ ownership of project activities and results. It will also allow make adjustments to the project implementation structure and the work-plan if needed.

**Project Implementation Reports (PIR)** – Employing the six-month and annual PSC reporting in combination with other monitoring reports, UNIDO will prepare the require PIRs to monitor progress made since project start and in particular for the previous reporting period. The PIR includes, but is not limited to, reporting on the following:

- Progress made toward project objective and project outcomes – each with indicators, baseline data and end of project targets (cumulative)
- Project outputs delivered per project outcome (annual)
- Lesson learned/good practice
- Expenditure reports
- Risk and adaptive management
- Portfolio level indicators (i.e. GEF focal area tracking tools) are also used by most focal areas on an annual basis

#### ***Evaluation***

Project evaluation will be performed under the Theory of Change methodology and the Results Based Management approach captured on the Projects Results Framework in Annex A.

**Mid-term Review (MTR)** - The Project will undergo a Mid-Term Review at the mid-point of project implementation (after two years of implementation). The mid-term review will examine the Project’s performance with respect to the planning and adaptive management requirements of both UNIDO and the GEF (*The GEF Monitoring and Evaluation Policy 2010*). It will determine progress being made toward the achievement of project’s outputs and outcomes and will identify possible corrections needed. The TOR for this evaluation will be prepared by the UNIDO Project Manager based on

guidance from the UNIDO Evaluation Group. The project's Theory of Change will also be updated at this mid-way point of implementation.

During the last three months of the project, the project team will prepare the **Project Terminal Report**. This comprehensive report will summarize the results achieved (objectives, outcomes, outputs), lessons learned, problems met and areas where results may not have been achieved. It will also lay out recommendations for any further steps that may need to be taken to ensure sustainability and replicability of the project's results.

**Final Evaluation (FEV)** - The Project will undergo an independent FEV six months after the closure of project activities – after four years. The FEV will focus on the delivery of the Project's results as initially planned (and as corrected after the mid-term evaluation, if any such correction took place). It will examine the Project's performance with respect to the planning and adaptive management requirements of both UNIDO and the GEF (*The GEF Monitoring and Evaluation Policy 2010*) it will determine progress made toward the achievement of project's outputs and outcomes. The TOR for this evaluation will be prepared by the UNIDO Project Manager based on guidance from the UNIDO evaluation group.

The FEV will also provide recommendations for follow-up activities and requires a management response.

### ***Learning and knowledge sharing***

Results from the project will be disseminated within and beyond the project intervention zone through existing information sharing networks and forums. The Project will identify and participate, as relevant and appropriate, in scientific, policy based and/or any other networks which may be of benefit to project implementation through lessons learned. The Project will identify, analyse and share lessons learned that may be beneficial in the design and implementation of similar future projects.

According to the M&E policies of the GEF and UNIDO, follow-up studies like Country portfolio evaluations and thematic evaluations can be initiated and conducted. All GEF Project partners and contractors are obliged to (i) make available studies, provide reports or other documentation related to the project and (ii) facilitate interviews with staff involved in the Project activities.

***Table Seven: M&E Budget Breakdown by Activity***

Type of M&E activity	Responsible Parties	Time Frame	Indicative Cost (US\$)	
			GEF	UNIDO & Project Partners (in-kind)
Project inception phase containing a Theory of Change validation and expansion session as well as baseline development (incl. gender) and setting under working groups and an inception workshop (IW)	PCU, UNIDO, Consultants	Within first three months of Project start up, with reports immediately following IW	0	14,500
Rolling yearly monitoring system with continual data collection and analysis in order for measurement of means of verification for Project Progress and Performance	PCU, UNIDO, NCPC-SA and SANEDI	Rolling monitoring from project activity commencement - with annual verification reviews and at project completion	15,000	90,000
Semi-annual project progress reports	UNIDO, PCU	Every six-months	0	21,000
MTR Process - complete with all preparation and data packaging	UNIDO, External Consultants	At mid-point of project implementation	30,000	28,000
Project Terminal Report	UNIDO, PCU	At end of project implementation	0	25,000

Type of M&E activity	Responsible Parties	Time Frame	Indicative Cost (US\$)	
			GEF	UNIDO & Project Partners (in-kind)
Project FEV Preparation - complete with all preparation and data packaging	UNIDO, PCU, NCPC-SA and SANEDI	At end of project implementation and prior to final evaluation	0	14,500
Project FEV - complete with pre-evaluation preparation and logistics. The FEV is an independent evaluation process.	UNIDO recruited but independent evaluation consultant team	Within six months of completion of project implementation	55,000	7,000
<b>TOTAL INDICATIVE COST</b>			100,000	200,000

**D. Legal context**

The following legal context will apply to the project: “The Government of the Republic of South Africa agrees to apply to the present project, mutatis mutandis, the provisions of the Standard Basic Assistance Agreement between the United Nations Development Programme and the Government, signed on 03 October 1994.”

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

**A. RECORD OF ENDORSEMENT OF GEF OPERATIONAL FOCAL POINT(S) ON BEHALF OF THE GOVERNMENT(S):**

(Please attach the Operational Focal Point endorsement letter(s) with this template. For SGP, use this OFP endorsement letter).

NAME	POSITION	MINISTRY	DATE (mm/dd/yyyy)
Mr Zaheer Fakir, GEF Operational Focal Point	Chief Director, International Governance and Relations	Department of Environmental Affairs, Government of the Republic of South Africa	09/07/2012

**B. GEF AGENCY(IES) CERTIFICATION**

This request has been prepared in accordance with GEF/LDCF/SCCF policies and procedures and meets the GEF/LDCF/SCCF criteria for CEO endorsement/approval of Project.

Agency Coordinator, Agency Name	Signature	Date (Month, day, year)	Project Contact Person	Telephone	Email Address
Mr. Philippe R. Scholtès, Managing Director, Programme Development and Technical Cooperation Division (PTC) UNIDO GEF Focal Point		09/29/2015	James New, Industrial Development Officer, Energy Branch 	+43 (0)1 26026 3641	j.new@unido.org

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**REQUEST FOR CEO ENDORSEMENT**  
**PROJECT TYPE: Full-sized Project**  
**TYPE OF TRUST FUND: GEF Trust Fund**

For more information about the GEF, visit [TheGEF.org](http://TheGEF.org)

**ANNEX A: PROJECT RESULTS FRAMEWORK**

<b>UNIDO/GEF Project: Industrial Energy Efficiency Improvement through Mainstreaming the use of Energy Management Systems and Energy Systems Optimization.</b>
<b>Applicable GEF Strategic Objective and Program:</b> CCM-2 Energy Efficiency: Promote market transformation for energy efficiency in the industrial and buildings sectors
<b>Applicable GEF Expected Outcomes:</b> CCM-2 “Appropriate policy, legal and regulatory frameworks adopted and enforced”; Sustainable financing and delivery mechanisms established and operational”; “GHG emissions avoided.”
<b>Applicable GEF Outcome Indicators:</b> CCM-2 “Extent to which EE policies and regulations are adopted and enforced”; “Volume of investment mobilized”; Tonnes of CO2 equivalent avoided.”

Objective / Outcomes / Outputs	Indicator	Baseline	Targets (End of Project)	Means of verification	Assumptions and risks
<b>Project Objective:</b> To accelerate and expand the introduction of Energy Management Systems (EnMS), Industrial Energy Systems Optimization (ESO), and the Energy Management Standard ISO50001 within the South African industrial (and selected commercial) context in order to realize increased investment in industrial energy efficiency (IEE) through the wide-scale adoption of the two methodologies and ISO 50001 under (i) enhanced institutional frameworks and regulatory environments, (ii) technical and implementation assistance to industry and (iii) multi-level engineer, technician and operator capacity building programmes	Incremental direct GHG emission reductions (tons of CO <sub>2eq</sub> )	0 tons of CO <sub>2eq</sub> reduced from industry through accelerated EnMS, ESO and Energy Management Standards	Cumulative direct emission reduction of 3,280,000 tCO <sub>2e</sub>	As given under the various Outcomes, including surveys, monitoring, and tracking	Government remains fully committed to the need to reduce national industrial energy intensity and improve EE as well as reduce the GHG emissions of the industrial sector under new and enhanced policy and regulatory mechanisms are put in place that foster real improvements in industrial energy performance.
	Incremental indirect GHG emission reductions (tons of CO <sub>2eq</sub> )	0 tons of CO <sub>2eq</sub> reduced from industry through accelerated EnMS, ESO and Energy Management Standards	Indirect emission reduction of 25,233,800 tCO <sub>2eq</sub> from 2020 to 2029	Project terminal report	
	Reduction of energy consumption (GJ or MWh) in targeted industrial and commercial sectors	0 GJ through accelerated EnMS, ESO and Energy Management Standards	Implementation of EnMS and ESO improvements in 150 enterprises lead to lifetime fuel and energy savings of 32,422,400 GJ Primary Energy	Project terminal report	Industry appetite and drive for energy costs reduction and enhanced EE grows progressively stronger and widens (incl. relevant commercial sectors).

Objective / Outcomes / Outputs	Indicator	Baseline	Targets (End of Project)	Means of verification	Assumptions and risks
<b>Component 1.0</b>	<b>Data Quality Improvement to Facilitate Data Rich Industrial Energy Efficiency and Energy Management Policy Implementation</b>				
<i>Outcome 1.0. Strengthened energy planning (and related energy and GHG emissions reduction target setting) through improved data and reporting on energy consumption and potential savings under EnMS and ESO</i>	<ul style="list-style-type: none"> <li>Updated and strengthened IEE and GHG data available, with EnMS and ESO benchmarking available</li> </ul>	<ul style="list-style-type: none"> <li>Incomplete data on industrial energy use and savings opportunity baseline under EnMS and ESO</li> </ul>	<ul style="list-style-type: none"> <li>Industrial subsectors baseline mapped for energy use and benchmarked for EnMS and ESO potential</li> </ul>	<ul style="list-style-type: none"> <li>Official and Government publications</li> <li>Final Project and Evaluations, Meeting reports</li> <li>GHG calculations of the NCCRS</li> <li>National Communications to UNFCCC</li> </ul>	Sustained Government commitment to strengthen data and reporting. Willingness of industry to share data. Improved gathering and reporting of energy consumption and potential savings data under EnMS/ESO informs national energy performance improvement policy goals. Industry willing to undertake EnMS/ESO based benchmarking and Government use them to strengthen energy management policy and regulation from 2016 onwards.
<i>Output 1.1</i> Energy consumption / performance mapped with the savings potential, potential penetration and main challenges of EnMS and ESO in line with ISO 50006 methodologies within selected industrial and commercial sectors	<ul style="list-style-type: none"> <li>Number of high energy intensity industry subsectors baseline mapped for: (i) energy intensity/use dynamics and (ii) savings potential under EnMS and ESO</li> </ul>	<ul style="list-style-type: none"> <li>Only iron and steel, non-ferrous metals, non-metallic minerals and chemicals sectors industry sectors energy intensity/use dynamics mapped and no industry subsectors mapped on savings potential under EnMS and ESO</li> </ul>	<ul style="list-style-type: none"> <li>At least 8 additional industrial subsectors are fully baseline mapped for energy intensity/use dynamics and savings potential under EnMS and ESO with DoE mapped sectors being remapped to include savings potential of EnMS and ESO</li> </ul>	<ul style="list-style-type: none"> <li>Government communication and publications; project publications</li> <li>Project documentation</li> </ul>	Continued willingness of industry to share relevant data Savings potential, of EnMS and ESO are captured with minimal statistical discrepancy ensured by quality assurance.
<i>Output 1.2</i> Country specific EnMS and ESO best practice technology and process benchmarks established in line with the National Energy Efficiency Strategy (NEES) and the National Energy Efficiency Action Plan (NEEAP)	<ul style="list-style-type: none"> <li>Number of high energy intensity industry subsectors best practice benchmarked for EnMS and ESO</li> </ul>	<ul style="list-style-type: none"> <li>No industry subsectors best practice benchmarked for EnMS and ESO</li> </ul>	<ul style="list-style-type: none"> <li>At least 8 industry subsectors are EnMS and ESO best practice and process benchmarked</li> </ul>	<ul style="list-style-type: none"> <li>Government communication, official publications</li> <li>Project publications; project documents</li> </ul>	Industry values and takes part in benchmarking exercises and supplies relevant data, thereby ensuring benchmarking results are representative of EnMS and ESO best practice both nationally and internationally.
<b>Component 2.0</b>	<b>Strengthening Policy Implementation and Support Frameworks for EnMS, ESO and Energy Management Standards</b>				
<i>Outcome 2.0</i> Enhanced promotion of investment in IEE through strengthened policy and regulatory frameworks and support to increase the uptake of Energy Management Standards	<ul style="list-style-type: none"> <li>Revised and strengthened policies and regulatory frameworks</li> <li>Standards institutions (SANAS, SABS and SAATCA) providing increased levels of</li> </ul>	<ul style="list-style-type: none"> <li>No strengthened IEE policies/regulations exist</li> <li>Limited SANS/ISO 50001 Series accreditation and certification capacity</li> </ul>	<ul style="list-style-type: none"> <li>2 revised / enhanced policies / regulations that support increased investment in IEE</li> <li>25% increased national accredited certification capacity for SANS/ISO</li> </ul>	<ul style="list-style-type: none"> <li>Government communications and reports</li> <li>Project training reporting</li> <li>SANS/ISO5001</li> </ul>	Sustained Government commitment to strengthen and coordinate IEE policy and regulatory frameworks and supporting tools  Continued support and willingness of industry and auditing bodies to adopt

Objective / Outcomes / Outputs	Indicator	Baseline	Targets (End of Project)	Means of verification	Assumptions and risks
	accreditation and increase certification by auditing bodies under the SANS/ISO50001 Series		50001 Series	Series training and support materials • PIRs, Project terminal report	the SANS/ISO 50001 Series standards
<b>Output 2.1</b> Targeted technical assistance and capacity building to enhance and implement IEE policies, incentives and regulatory frameworks supporting EnMS and ESO uptake and strengthening the coordination of associated activities across government agencies	<ul style="list-style-type: none"> <li>• Technical assistance and capacity building programme supporting Government institutions established</li> <li>• Interdepartmental IEE project coordination established</li> <li>• Gender equality issues identified for IEE and enhanced policy tools to promote women in IEE</li> </ul>	<ul style="list-style-type: none"> <li>• Capacity gaps weaken IEE policy/regulation and target planning</li> <li>• Limited interdepartmental coordination between government institutions</li> <li>• No gender equality issues identified for IEE, and no gender equality policy enhancement tools</li> </ul>	<ul style="list-style-type: none"> <li>• 4 capacity development workshops held</li> <li>• Interdepartmental IEE project coordination established through 8 working groups and/or interdepartmental workshops</li> <li>• IEE gender equality needs assessment; 2 policy tools to actively promote increased participation of women in IEE</li> </ul>	<ul style="list-style-type: none"> <li>• Government communication and reports</li> <li>• Project reports</li> <li>• PIRs, Project terminal report</li> </ul>	<p>Technical assistance and capacity building will enhance the implementation of IEE policies, incentives and regulatory framework supporting EnMS and ESO</p> <p>Adequate willingness to enhance coordination between involved authorities</p>
<b>Output 2.2</b> Assistance to operationalize SANS/ISO 50001 with additional advisory support, and recommended actions for Government and Standards Bodies to promote and mainstream Energy Audit (ISO 50002); Conformity Assessment (ISO 50003); and Energy Baselines and Performance Indicators (ISO 50006)	<ul style="list-style-type: none"> <li>• Introduction and scaled-up implementation of ISO 50002, ISO 50003 and ISO 50006 supported through advisory support, accreditation capacity building and promotional events for SANS/ISO 50001</li> <li>• Centres of training for M&amp;V Auditors under SANS 50010 delivering courses</li> </ul>	<ul style="list-style-type: none"> <li>• No existing institutional support for, and promotion of, ISO 50002, ISO 50003 and ISO 50006 as well as incomplete promotion of SANS/ISO 50001</li> <li>• No support delivered by the SA IEE Project to training centres and auditors for delivery of SANS 50010</li> </ul>	<ul style="list-style-type: none"> <li>• ISO 50002, 50003 and 50006 best-practice analysis and institutional capacity building; and 5 SANS/ISO 50001 Series promotional events</li> <li>• 3 workshops for M&amp;V Auditors under SANS 50010. Accreditation technical support to 8 potential auditing/certification bodies</li> </ul>	<ul style="list-style-type: none"> <li>• Government communication and reports</li> <li>• Project reports</li> <li>• PIR, Project terminal report</li> <li>• Project training reporting</li> <li>• SANS/ISO 50001 series training and support materials</li> </ul>	<p>Government and standards bodies supportive of the introduction of ISO 50002, 50003 and 50006. Promotional activities successfully generate growing industry demand for the SANS/ISO 50001 Series. Government incentive (12L) revision results in sufficient demand for SANS50010 compliant M&amp;V services to accelerate the M&amp;V auditing market.</p>
<b>Output 2.3</b> Training courses with supporting tools for the SANS/ISO 50001 Series to assist in the introduction of Energy Audit (ISO 50002), Conformity Assessment (ISO 50003) and Energy Baselines and Performance Indicators (ISO 50006) as well as to promote increased Measurement & Verification and	<ul style="list-style-type: none"> <li>• Updated SANS/ISO 50001 Lead Auditor and TCP training course</li> <li>• Course delivered with new ISO 50002 and 50003 and 50006 training and support tools</li> </ul>	<ul style="list-style-type: none"> <li>• Outdated SANS/ISO 50001 Lead Auditor training materials with no existing training material, support tools or courses on ISO 50002 and 50003 and 50006 available under</li> </ul>	<ul style="list-style-type: none"> <li>• Updated SANS/ISO 50001 training course and associated support materials; with - 2 training workshop sessions held;</li> <li>• Training workshops</li> </ul>	<ul style="list-style-type: none"> <li>• Hard (and digital) copies of training material and support tools</li> <li>• Enrolment in courses</li> <li>• Project reports</li> </ul>	<p>Significant Government, and Standards body commitment and industry demand for introduction of additional SANS/ISO 50001 Series standards: Energy Audit (ISO 50002), Conformity Assessment (ISO 50003) and Energy Baselines and Performance Indicators (ISO 50006) as well as for</p>

Objective / Outcomes / Outputs	Indicator	Baseline	Targets (End of Project)	Means of verification	Assumptions and risks
the uptake of SANS 50010	<ul style="list-style-type: none"> <li>Development and delivery of SANS 50010 M&amp;V accreditation training package and tools for industry</li> <li>Evidence of promoting women's participation; an increase of 10 % of female participants in training initiatives for Lead Auditor certification roles</li> </ul>	<p>the South Africa IEE Project</p> <ul style="list-style-type: none"> <li>Insufficient market and accredited capacity for M&amp;V under SANS 50010</li> <li>No promotion for women's participation in SANS/ISO 500001; Lead Auditor training participation level of 25% for women (under SA IEE Project)</li> </ul>	<p>(complete with course and associated support materials) / events held:</p> <ul style="list-style-type: none"> <li>ISO 50002 - 8 sessions;</li> <li>ISO 50003 - 2 sessions;</li> <li>ISO 50006 - 8 sessions</li> <li>5 training courses/ technical sessions on M&amp;V auditing under SANS 50010</li> <li>Promotional materials targeting women; 35% female participation in SANS/ISO 50001 Lead Auditor training</li> </ul>	<ul style="list-style-type: none"> <li>PIR, Project terminal report</li> </ul>	<p>the increased uptake of SANS 50010 compliant M&amp;V</p> <p>Adequate numbers of females work within areas that will make them eligible/appropriate for the ISO 50002, 50003 and 50006 training.</p>
<b>Component 3.0</b>	<b>Mainstreaming EnMS and ESO Training and Skills Development Programmes</b>				
<i>Outcome 3.0 Expansion of the EnMS and ESO capacity building programme with the inclusion of new ESO topics and multi-level enterprise trainee courses under parallel NQF institutionalization and market capacitation enhances the capacity of the South African industrial sector to implement EnMS and ESO and achieve energy savings</i>	<ul style="list-style-type: none"> <li>EnMS and ESO courses available with new ESO topics and technician-level course options.</li> <li>EnMS and ESO course materials are redesigned to become part of the NQF Occupational Qualifications</li> <li>Professional body representing EnMS and ESO professionals exists</li> </ul>	<ul style="list-style-type: none"> <li>EnMS and ESO training courses not available after mid-2015 (no training at advanced / expert level</li> <li>NQF Occupational Qualifications do not have course contents defined or developed</li> <li>No industry representation body for EnMS and ESO practitioners</li> </ul>	<ul style="list-style-type: none"> <li>150% increase in national EnMS and ESO trained capacity</li> <li>NQF Occupational Qualification Course materials are developed</li> <li>Professional body for EnMS and ESO practitioners working group is established</li> </ul>	<ul style="list-style-type: none"> <li>Hard (and digital) copies of training material and support tools</li> <li>Government communication and reports</li> <li>Project reports</li> <li>PIR, Project terminal report</li> </ul>	<p>Sufficient demand for continued delivery of the existing EnMS and ESO courses, and additional ESO topics and multi-employee level courses within the South African industrial sector. NQF Occupational Qualifications able to become commercially viable and sustainable. Sufficient demand for establishing a suitable professional body.</p>
<i>Output 3.1 Expanded engineer-level EnMS and ESO Industry Capacity Building courses developed and delivered including new professionally recognized ESO topics, graduate mentorship and SME EnMS Implementation Guide resource packages and learning materials</i>	<ul style="list-style-type: none"> <li>EnMS and ESO courses available. Number trained at the Advanced and Expert Level</li> <li>Training packages / curriculum for additional ESO disciplines available (incl. gender sensitive planning and facilities)</li> <li>Guidance material for</li> </ul>	<ul style="list-style-type: none"> <li>EnMS and ESO training courses not available after mid-2015 (no training at advanced / expert level)</li> <li>No training for additional ESO disciplines</li> <li>No EnMS</li> </ul>	<ul style="list-style-type: none"> <li>Delivery of EnMS and ESO training courses under GEF Project (120 experts trained &amp; 750 Advanced-Level graduates))</li> <li>Comprehensive training packages / curriculum for additional ESO disciplines (with gender sensitive planning)</li> </ul>	<ul style="list-style-type: none"> <li>Hard copies of training materials</li> <li>Copies of software and tools</li> <li>SAIMechE CPD scheme recognition documentation of new ESO topics.</li> <li>Courses enrolment records, Training</li> </ul>	<p>Continued high need and demand for the provision of EnMS and ESO training assistance to industry and the consultancy base in S. Africa as well as for the introduction of additional ESO disciplines and EnMS/ESO enterprise implementation tools.</p> <p>Adequate numbers of females work within the industrial and consulting engineering base to take up the</p>

Objective / Outcomes / Outputs	Indicator	Baseline	Targets (End of Project)	Means of verification	Assumptions and risks
	<p>SMEs available</p> <ul style="list-style-type: none"> <li>• ESO Expert Level Graduates benefitting from mentoring</li> <li>• % Increase in women participating in courses</li> </ul>	<p>implementation guidance for SMEs</p> <ul style="list-style-type: none"> <li>• No ESO Expert-Level Graduate mentoring</li> <li>• SA IEE Project female EnMS/ESO course participation rates at Expert Level 12% and 9%; while at Advanced Level 20% and 14% respectively.</li> </ul>	<ul style="list-style-type: none"> <li>• SMEs Implementation Guide developed</li> <li>• At least 25% ESO Expert-Level course graduates benefit from the ESO Mentoring</li> <li>• 10% increase in women's participation in EnMS courses and 5% rise for the ESO courses over baseline</li> </ul>	<p>workshop/course proceedings including list of attendees</p> <ul style="list-style-type: none"> <li>• Project reports</li> <li>• PIR, Project terminal report</li> </ul>	<p>different EnMS and ESO training courses.</p>
<p><b>Output 3.2</b> EnMS and ESO Technician Courses developed and delivered with supporting bridging courses for enterprise staff as well as development of Vocational EnMS and ESO Training Course Modules and supporting materials</p>	<ul style="list-style-type: none"> <li>• EnMS and ESO training programmes at the technician/plant operator staff level available. Number of EnMS/ESO trained technical personnel</li> <li>• EnMS and ESO course modules and teaching support materials exist</li> <li>• Active promotion of participation and support tools for women as EnMS/ESO trained industry technicians / operators.</li> </ul>	<ul style="list-style-type: none"> <li>• No EnMS and ESO training programmes aimed at the technician/plant operator staff level</li> <li>• TVETs are not capacitated to deliver EnMS and ESO course modules</li> <li>• No promotion and tools to support women's development as EnMS/ESO trained industry technicians / operators</li> </ul>	<ul style="list-style-type: none"> <li>• EnMS and ESO training programmes for technician/plant operator staff developed and delivered 500 technician/operator staff trained</li> <li>• Teaching support package and EnMS/ESO course modules prepared and delivered by TVET institutions</li> <li>• Support tools for women's participation / development as EnMS/ESO trained industry technicians / operators</li> </ul>	<ul style="list-style-type: none"> <li>• Hard copies of training materials</li> <li>• Copies of software and tools</li> <li>• DHE record of EnMS/ESO quality assurance.</li> <li>• Project reports</li> <li>• PIR, Project terminal report</li> </ul>	<p>There is sufficient demand for the delivery of technician/plant operator EnMS and ESO courses within the S. African industrial sector.</p> <p>DHE continues to support the inclusion of EnMS and ESO modules under vocational education courses for industrial technicians.</p> <p>Female technicians exist in high enough numbers for the EnMS and ESO capacity building to register a significant impact in gender skills enhancement.</p>
<p><b>Output 3.3</b> Institutionalized and NQF Compliant EnMS and ESO training course materials developed and provided to commercial Training Providers combined with targeted capacity building and market development initiatives as well as assistance to establish a Green Industry Professional Association</p>	<ul style="list-style-type: none"> <li>• NQF Occupational Qualification course module materials exist</li> <li>• Number of Commercial Training Providers accredited to offer EnMS and ESO NQF Occupational Qualifications</li> <li>• Promotion packages for NQF qualifications to</li> </ul>	<ul style="list-style-type: none"> <li>• NQF Occupational Qualifications not finalized / no NQF course module materials exist</li> <li>• Commercial Training Providers not capacitated or accredited</li> <li>• NQF Occupational Qualifications with</li> </ul>	<ul style="list-style-type: none"> <li>• Developed and NQF approved Occupational Qualification EnMS and ESO course module materials exist for both qualification courses</li> <li>• Training provided to 5-10 Commercial Training Providers to achieve accreditation</li> <li>• Commercial Training</li> </ul>	<ul style="list-style-type: none"> <li>• EW-SETA NQF records</li> <li>• Training Provider training workshop records including list of attendees</li> <li>• Enrolment in NQF course module Train-the-trainer courses</li> <li>• Legal and</li> </ul>	<p>The two NQF Occupational Qualifications are finalized and released.</p> <p>Industrial demand for the two course is strong enough to support a viable 'at commercial cost' market.</p> <p>Training Providers are willing to take up the courses and offer them commercially once properly capacitated and accredited.</p>

Objective / Outcomes / Outputs	Indicator	Baseline	Targets (End of Project)	Means of verification	Assumptions and risks
	<p>industry highlight women's roles; % of women participating</p> <ul style="list-style-type: none"> <li>• Train-the-trainer courses with active promotion of women; % women training staff</li> <li>• Establishment of professional body representing EnMS and ESO professionals</li> </ul>	<p>inadequate numbers of EnMS and ESO trainers</p> <ul style="list-style-type: none"> <li>• No promotion packages for NQF Occupational Qualifications (and none highlighting of women's enrolment)</li> <li>• No promotion of women as Training Provider trainers</li> <li>• No professional body representing EnMS and ESO professionals</li> </ul>	<p>Providers offering NQF Qualifications</p> <ul style="list-style-type: none"> <li>• 20% women enrolled in the NQF Occupational Qualifications</li> <li>• Train-the-trainer courses actively promote 15% of women as Training Provider staff / contractors</li> <li>• A professional body for IEE practitioners is established</li> </ul>	<p>administrative records of Professional Body establishment (Stakeholder meeting records)</p> <ul style="list-style-type: none"> <li>• Project reports</li> <li>• PIR, Project terminal report</li> </ul>	<p>Wide scale growth of functioning commercial based training market for EnMS and ESO training helps to achieve institutionalization of EnMS and ESO methodologies and sector drive to establish a professional body for IEE practitioners</p>
<b>Component 4.0</b>	<b>Investment Promotion in IEE through EnMS and ESO Demonstration and Financial Mechanisms and Incentive Access Support for Industry and Selected Commercial Sectors</b>				
<b>Outcome 4.0 Access to finance increased with the energy and cost saving benefits of EnMS and ESO proven within the South African industrial context, with industry actively and progressively pursuing enhanced IEE</b>	<ul style="list-style-type: none"> <li>• Demonstrated and measured EnMS and ESO energy savings</li> <li>• Accessibility to finance increased for IEE investment (number of enterprises accessing IEE incentive mechanisms and private sector finance)</li> </ul>	<ul style="list-style-type: none"> <li>• 60 EnMS and 90 ESO pilots implemented as well as carried out under of the SA IEE project</li> <li>• Access to IEE incentive finance is often difficult and few private credit lines are available for IEE investment</li> </ul>	<ul style="list-style-type: none"> <li>• Mix of 150 enterprise EnMS / ESO implementations under the Project's Demonstration Programme</li> <li>• Increased access to IEE incentive mechanisms (200 enterprises accessing incentives). Local banks provide finance for IEE (10% increase in loans for IEE investments)</li> </ul>	<ul style="list-style-type: none"> <li>• Project documents, incl. enterprise Letters of Intent to participate in demo programme</li> <li>• Project Monitoring System</li> <li>• Financial publications; banking, incentive Mechanism documentation</li> <li>• Government publications</li> </ul>	<p>Growing industry demand for IEE and EnMS/ESO as result of increased awareness of their energy and cost savings benefits and the national need to improve energy performance. Commercial interest from private and financial sector to invest in IEE enhanced by project activities. Ability of Government Incentive and Financial mechanisms to evolve to include EnMS and ESO investments.</p>
<b>Output 4.1</b> EnMS and ESO demonstration programme of 150 individual enterprises (50 large, 100 SMEs) across multiple industrial and selected commercial sectors	<ul style="list-style-type: none"> <li>• Energy and cost saving results from energy audits of EnMS and ESO demonstration projects</li> <li>• Women participation in, and leadership of, enterprise EnMS energy management teams.</li> </ul>	<ul style="list-style-type: none"> <li>• 150 Enterprises used as pilots for EnMS and ESO demonstration under the SA IEE Project</li> <li>• No active promotion of women's participation in EnMS energy</li> </ul>	<ul style="list-style-type: none"> <li>• New EnMS and ESO implementation demonstrations in 150 enterprises</li> <li>• 10% women in EnMS management teams and 5% prevalence in leadership roles</li> </ul>	<ul style="list-style-type: none"> <li>• Project documents, incl. enterprise Letters of Intent</li> <li>• Project Monitoring System for demo enterprise savings tracking and case studies.</li> </ul>	<p>Enterprises willing to implement EnMS and ESO measures to save costs and energy under the renewed national power constraint. Targeted companies benefit from EnMS and/or ESO technical assistance. Companies willing to share information on energy and cost savings for case study purposes.</p>

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		management teams.		<ul style="list-style-type: none"> <li>Project reports</li> <li>PIR, Project terminal report</li> </ul>	
<b>Output 4.2</b> Support to industrial enterprises through a financial proposal advice/ match-making support mechanism and other assistance programmes to assist access to, and understanding of, IEE private sector financing and Government financial incentive programmes	<ul style="list-style-type: none"> <li>Match making support mechanism for bankable proposal development</li> <li>Published guidelines for financial development / evaluation of IEE projects</li> <li>Training workshops on proposals / financing for industry personnel</li> </ul>	<ul style="list-style-type: none"> <li>No support centre to assist enterprises in developing IEE financial proposals</li> <li>No guidelines for financial development and evaluation of IEE</li> <li>Limited support to industry on developing bankable proposals</li> </ul>	<ul style="list-style-type: none"> <li>Support centre for IEE projects</li> <li>Financial proposal development guidelines published</li> <li>15 financial proposal development workshops for industry personnel</li> </ul>	<ul style="list-style-type: none"> <li>NBi official publications</li> <li>Project reports</li> <li>Guidelines for financial evaluation of industrial</li> </ul>	Willingness, active participation and demand by industries and national experts for the impartial support centre and its established mechanisms and programmes/ services. EnMS and ESO projects able to attract adequate financing. Companies willing to access private sector finance and financial incentives.
<b>Output 4.3</b> Targeted technical support to FIs/IFIs and Government providers of IEE finance to develop, enhance access and evolve funding mechanisms, incentives and financial packages/credit streams for industrial enterprises implementing EnMS and ESO measures	<ul style="list-style-type: none"> <li>Number of trained staff from financial industry and Government providers of financing</li> </ul>	<ul style="list-style-type: none"> <li>Limited knowledge of FI/IFIs on IEE project investment financing</li> <li>Government IEE incentives not operating to full potential</li> </ul>	<ul style="list-style-type: none"> <li>10 Training workshops conducted on financial schemes to enhance awareness of financial staff of at least 3 local FIs and 2 IFIs.</li> </ul>	<ul style="list-style-type: none"> <li>Workshop proceedings including list of attendees</li> <li>Project reports</li> <li>PIR, Project terminal report</li> </ul>	<p>Government agencies support increased access to financial incentives for IEE measures.</p> <p>Commercial banks willing to support increased access to finance for IEE measures</p>
<b>Component 5.0</b>	<b>EnMS and ESO Awareness, Promotion, Service Demand Generation and Lessons Sharing</b>				
<b>Outcome 5.0 Enterprise management (across the entire South African industrial sector and selected commercial sectors) is aware of the potential financial, economic and climate change mitigation benefits that adopting EnMS and ESO can yield</b>	<ul style="list-style-type: none"> <li>Number of individual industry / selected commercial sector enterprises sensitized by publications, media events, seminars and other awareness engagement activities</li> </ul>	<ul style="list-style-type: none"> <li>&lt;20% of individual industry and selected commercial sector enterprises sensitized on EnMS and ESO methodologies and related benefits</li> </ul>	<ul style="list-style-type: none"> <li>51% of individual enterprises aware of financial and energy benefits of IEE, EnMS and ESO and the potential energy and financial benefits</li> </ul>	<ul style="list-style-type: none"> <li>Hard copy of communications strategy</li> <li>Survey of enterprises' awareness</li> <li>PIR, Project terminal report</li> </ul>	EnMS and ESO awareness raising activities generate growing industry demand for IEE, and EnMS and ESO in particular.
<b>Output 5.1</b> Holistic Awareness and Communications Strategy to increase awareness and showcase the benefits of implementing EnMS and ESO methodologies	<ul style="list-style-type: none"> <li>Communications Strategy produced (including gender issues and positively recognizing women in the field of IEE)</li> </ul>	<ul style="list-style-type: none"> <li>No GEF Project Communications Strategy exists</li> </ul>	<ul style="list-style-type: none"> <li>Holistic communications strategy implemented including gender issues and targets as well as new gender relevant stakeholders</li> </ul>	<ul style="list-style-type: none"> <li>Communications strategy</li> <li>Project reports</li> <li>PIR, Project terminal report</li> </ul>	A holistic communications strategy will successfully outline and guide the communications activities necessary to disseminate the benefits of EnMS and ESO as well as IEE in general.
<b>Output 5.2</b> Communication and awareness outreach activities to promote uptake of policy frameworks, standards, learning	<ul style="list-style-type: none"> <li>Number of GEF Project convened EnMS and</li> </ul>	<ul style="list-style-type: none"> <li>No GEF Project communication</li> </ul>	<ul style="list-style-type: none"> <li>10 specific GEF Project convened EnMS and</li> </ul>	<ul style="list-style-type: none"> <li>Web-based platform with</li> </ul>	Government aligned communication and industry outreach initiatives allow stakeholders to learn about the

Objective / Outcomes / Outputs	Indicator	Baseline	Targets (End of Project)	Means of verification	Assumptions and risks
circles, financing opportunities, training and capacity building activities, and EnMS and ESO	<p>ESO events</p> <ul style="list-style-type: none"> <li>• Enterprise Quick Self-Help Guidelines for in-house ESO/EnMS IEE awareness produced</li> <li>• Networks of knowledge sharing peer-to-peer Energy Circles</li> <li>• Dissemination of best practices and results</li> <li>• Number of editorials and media releases of various formats</li> </ul>	<p>activities</p> <ul style="list-style-type: none"> <li>• No companies have access to Quick ESO/EnMS IEE Self-Help Guides</li> <li>• No formal peer-to-peer Energy Circles existing</li> <li>• SA IEE Project editorials and media releases (ending in mid-2015)</li> </ul>	<p>ESO events; 50 wider IEE seminar events</p> <ul style="list-style-type: none"> <li>• Enterprise ESO/EnMS IEE Quick Self-Help Guides are available</li> <li>• Formal peer-to-peer Energy Circles established</li> <li>• Over 150 different media releases and editorials</li> </ul>	<p>project results</p> <ul style="list-style-type: none"> <li>• Media releases, editorials and event reports</li> <li>• Project publications</li> <li>• Learning circle websites</li> <li>• Guidelines for in-house awareness raising</li> <li>• Project reports, PIR, Project terminal report</li> </ul>	<p>potential benefits of adopting the EnMS and ESO IEE methodologies, which will lead to increased investment in IEE and EnMS/ESO implementation. Release and sharing of information and energy saving results by industry under the GEF Projects activities.</p>
<b>Component 6.0</b>	<b>Project Monitoring and Evaluation</b>				
<b>Outcome 6.0 The GEF Project is fully monitored and evaluated under periodic implementation assessment of impact, based on the ‘Theory of Change’ methodological approach</b>	<ul style="list-style-type: none"> <li>• Project Theory of Change developed and updated</li> <li>• Monitoring and evaluation exercises conducted</li> <li>• Impact Assessment conducted</li> </ul>	<ul style="list-style-type: none"> <li>• No GEF Project Theory of Change, monitoring, evaluation or impact assessment exercises undertaken</li> </ul>	<ul style="list-style-type: none"> <li>• Theory of Change operational</li> <li>• Scheduled monitoring, evaluation or impact assessment exercises undertaken</li> </ul>	<ul style="list-style-type: none"> <li>• Project Theory of Change</li> <li>• PIRs, project reports</li> <li>• PSC Reporting</li> <li>• Project terminal report</li> </ul>	<p>Monitoring activities allow stakeholders to fully monitor and evaluate the project’s progress allowing for a rolling EnMS/ESO national implementation Impact Assessment based on the ‘Theory of Change’ methodological approach</p>
<b>Output 6.1</b> Monitoring and evaluation (M&E) mechanism, in line with the Theory of Change approach and determined Key Performance Indicators, established with regular monitoring exercises conducted, and PIRs and tracking tools prepared	<ul style="list-style-type: none"> <li>• Monitoring, reporting and evaluation mechanisms established as based on the project Theory of Change and monitoring and reporting conducted as scheduled</li> </ul>	<ul style="list-style-type: none"> <li>• No GEF Project monitoring, reporting and evaluation mechanisms as based on project Theory of Change</li> </ul>	<ul style="list-style-type: none"> <li>• All monitoring and reporting activities completed</li> </ul>	<ul style="list-style-type: none"> <li>• Project Theory of Change</li> <li>• PSC Reporting</li> <li>• PIRs, project reports</li> <li>• Project terminal report</li> </ul>	<p>The analysis of the M&amp;E and IA results of the different components will allow for periodic reviews of the GEF Project’s ‘Theory of Change’ and subsequent implementation strategies and work plans.</p>
<b>Output 6.2</b> Mid-term review and final project evaluations conducted, an evolving project ‘Theory of Change’ facilitated by M&E over the project’s lifetime, with reviews, reports and post project completion impact assessment(s)	<ul style="list-style-type: none"> <li>• Mid-term review and final project evaluation performed</li> <li>• Projects theory of change updated</li> </ul>	<ul style="list-style-type: none"> <li>• No project evaluations</li> <li>• No up-to-date project theory of change established</li> </ul>	<ul style="list-style-type: none"> <li>• Project reviews and evaluations conducted</li> <li>• Project theory of change updated</li> </ul>	<ul style="list-style-type: none"> <li>• Theory of change documentation</li> <li>• PSC Reporting</li> <li>• PIRs, project reports</li> <li>• Mid-term evaluation</li> <li>• Project terminal report</li> </ul>	<p>Mid-term review, project implementation review and final project implementation review will allow project implementation reporting an appropriate evaluation.</p>

## ANNEX B: RESPONSES TO PROJECT REVIEWS

(From GEF Agencies, and Responses to Comments from Council at Work Programme inclusion and the Convention Secretariat and STAP at PIF).

### (i) Comments submitted by GEF Council Members on the work program approved by the Council - Comments from Germany:

Nr.	Comment	Response
1	The SA Gov/DFID/SECO Project focuses on five key industry sectors and thereby covers the largest energy consuming industrial sectors, except for cement. It is not clear whether the GEF project will cover cement production.	The GEF Project will target the cement sectors as part of its focus on building materials (the SA IEE Project has also worked in South African cement sector (with PPC)
2	The GEF project aims to expand the implementation of EnMS and ESO throughout the industrial sector and beyond to relevant commercial sectors. It remains unclear what activities will be targeted in the commercial sectors.	Also refer to Annex H for targeted commercial sectors – typically, it can be expected that commercial entities will request technical assistance EnMS establishment over assistance for ESO implementation
3	It is a good approach that the same core project personnel will form the PMU and broader implementation team under GEF to transfer the knowledge gained. It shall be ensured that lessons learned, including possible shortcomings of the SA Gov/DFID/SECO Project, which are not part of the proposal, are adequately integrated when analyzing the impact of the project during PPG stage.	Core staff from the SA IEE Project will form part of the PMU and broader implementation team and the PIA and other activities during the PPG phase ensured lessons learnt will be considered in project design
4	It is commendable to specify the sustainability aspects of the project.	Refer to Section B for a number of inferences to project sustainability
5	The envisaged partnering with other institutions (SAGEN and Swiss Agency) is deemed a good approach to translate their experience in building sector in commercial and industrial sector.	SAGEN is now based in SANEDI which is now a core project partner while SECO is a donor to the GEF Project as well as a member of the project's PSC. SECO personnel have also been involved in assisting with the GEF Projects overall design.

### (ii) STAP

*Based on this PIF screening, STAP's advisory response to the GEF Secretariat and GEF Agency(ies): Consent*

Nr.	Comment	Response
	The project aims to accelerate and expand the introduction of energy management and industrial energy systems optimization following international ISO 50001 energy management standards in the industrial sector of South Africa. This is a very important project given the high energy intensity of South African industries and the large potential to reduce GHG emissions. STAP has the following comments and suggestions to be considered during the next phase.	N/A
1	The direct GHG emission reduction projection averages around 6000t CO <sub>2</sub> for each of the 150 pilot projects (though the range from large industries to SMEs will be wide). This is based on a total energy savings of 1000 GWh per year but how this figure was calculated is not shown. "The project will lead to considerable energy savings and GHG emission reductions". No indication of how the 150 pilots will be selected is given or the assumptions used in these calculations. (Indirect emission reductions of "4.5 to 5.0 tons of CO <sub>2</sub> eq" (page 10) seems low- perhaps it should be Mt). STAP recommends providing further details on the calculations, and how the 150 pilots will be selected.	<p>The estimations were based on experience from the savings being generated within the pilot group of the existing SA Gov/ UNIDO/DFID/SECO IEE Project. This was done in a compiled way i.e. the PPG Phase analysis looked the saving across different company size classes and then estimated how many of such sized companies the new GEF project could expect to secure is each size/consumption level classification. See Annex I.</p> <p>The EnMS/ESO demo enterprises will be selected on criteria such as: size, energy consumption, willingness to commit to long-term EnMS and opportunity to improve.</p>

Nr.	Comment	Response
		More detail is given under the description of Output 4.1 on Page 38
2	On economic viability of the industrial EE interventions, capacity building and promotional activities alone may not lead to large scale market development. What may be critical for the industrial users is the payback period or IRR. What happens if for given EE interventions the payback period is long and IRR is not attractive.	The main cost associated with EnMS and ESO observed so far has been the opportunity cost of company staff time. The actual EnMS and ESO interventions costs have been proved to be very low cost. For example the total investment cost at ArcelorMittal Saldanha Works steel plant was US\$ 50,000 with savings now reaching approximately US\$ 12.0 million per year. While continued improvement costs per plant do increase over time, they remain low/medium cost for a significant time period.
3	The Table Section B, 4.0 states that around 150 individual enterprises will be selected to implement energy efficient programmes (EnMS and ESO). It seems that GEF funding will be used to promote these (Table B, 4.1) and assist to develop bankable projects (page 9), with the co-financing (\$10.25 M) used for the large pilot programme (of 50 + 100 pilots at ~\$60,000 each) but in what way is not clear. Is it for monitoring the energy savings and then promoting them by dissemination of the results, or to undertake an analysis of baseline energy use and then install appropriate energy efficient technologies? A good assessment is made of the previous, on-going UNIDO/DFID/SECO project, being implemented since 2010, for the effectiveness of different interventions in promoting large scale adoption of EE technologies. It is not clear how the outcomes of this project can be separated, monitored and measured from those of this new GEF project to be superimposed.	Post low cost energy efficiency improvement project implementation, the higher cost inventions will be eligible for funding under the SA Government funding e.g. under the MCEP Incentive Scheme (Manufacturing Competitiveness Enhancement Programme). GEF funding is for the TA to develop, design and assist in the implementation of these funded in-plant initiatives....not pay for equipment as this will be covered by funding from the plants themselves or from Gov. funding mechanisms.
4	Capacity building is a key component. Training has begun under the existing SECO project with training courses having started in 2010 on a range of key topics. The GEF project is aimed to expand upon this introductory work, disseminate the outcomes, help develop a regulatory environment, and incorporate EE methodologies into higher education. The existing project has used external international experts to train local experts. It is not clear who exactly will develop the higher level programmes and short courses envisaged. Is an EnMS or ESO course likely to be 1 day, 1 month, or 1 year? Training is a key part of this programme so greater clarity on what level of teaching and technical expertise will be required needs further consideration. How many trainers will be needed at each level? How will meeting this component successfully be measured?	<p>The EnMS and ESO Advanced-Level courses are two days long. The EnMS and ESO Expert- Level Courses are 6-9 months long. The Expert-Level courses include a balanced combination between in-class and on-site training. The latter is strictly interrelated with the advocacy and demonstration part of the programme. The GEF Project will secure “Host Plants” where training takes place and course candidates undertake practical assessments during the course – the host plants get free ESO assessments and EnMS implementation examples while their own attending engineers gain practical experience.</p> <p>The envisaged new ESO courses will have international trainers where needed for both the Advanced and Expert-Level courses.</p> <p>Where the continuation of existing EnMS and ESO courses is concerned, a blend of South African and International trainers will be used:</p> <ol style="list-style-type: none"> <li>i. In regard to the existing EnMS and ESO Advanced level courses, S. African SA IEE Project trainers can take the lead for the most part.</li> <li>ii. In regard to the existing EnMS and ESO Expert-Level courses, these still require some input and support from the lead international experts</li> </ol> <p>Where new ESO subject Advanced Level courses are concerned, international leaders in each field will be used. Where new ESO subject Expert-Level courses are concerned, international leaders in each field will be used.</p>
5	Awareness and promotion actions (Component 5.0) are not defined explicitly. STAP recommends detailing further who will take the responsibility for achieving the goals of this	In the main FSP Document, and full communication plan will be presented. The strategy will also accommodate the different phases of the project i.e. initial phase mostly based on

Nr.	Comment	Response
	component, and how will success be measured?	advertisement and getting people to engage with the project and join the courses; Phase 2: showcase achievements and impact; Phase 3: highlight the savings potentials of EnMS and ESO through continuous improvement
6	Synergy with National Communications and BUR activities to be implemented in South Africa should benefit from the knowledge and information generated from these two projects.	Knowledge sharing is an issue in S. Africa. However, through partnering with both NCPC-SA and SANDEI, the two main actors within the IEE space, and those with an information sharing duty, as well as by embedding the project awareness activities within the wider DoE and the dti outreach objectives and initiatives, an adequate level of information sharing should be realized.
7	<p>There are a few related programs and projects which may be relevant to this project:</p> <p>A. The National Cleaner Production Centre of South Africa (NCPC-SA) is a national programme of government that promotes the implementation of resource efficiency and cleaner production (RECP) methodologies to assist industry to lower costs through reduced energy, water and materials usage, and waste management. It is hosted by the CSIR on behalf of the Department of Trade and Industry (dti).</p> <p>B. Industrial Energy Efficiency Improvement Project in South Africa. A national project was introduced in 2010 to improve the capacity of South African industry to use energy resources more efficiently and productively, now and in future years. This effort focuses on energy management and cost-effective systems optimisation techniques.</p> <p>C. ESMAP: Implementing Energy Efficiency and Demand Side Management South Africa's Standard Offer Model. Low carbon growth country studies program mitigating climate change through development.</p> <p>D. KFW: Green Energy Efficiency Fund. Programme supported by the German Cooperation and Development Ministry.</p> <p>i. In order to support and promote energy efficiency and renewable energy investments the Industrial Development Corporation (IDC) and the German Development Bank (KFW) have partnered, under the framework of the South African-German Financial Cooperation and established a R500 million facility for energy efficiency and small scale renewable energy projects.</p> <p>ii. The IDC will drive awareness of the need for energy efficiency among enterprises through the promotion of the Green Energy Efficiency Fund which supports the IDC's alignment to the Industrial Policy Action Plan (IPAP2) and the New Growth Path with specific focus on growing the Green Economy</p> <p>The industry chapter of the IPCC 4th Assessment Report - Mitigation, Working Group 3 would be a useful resource to identify the major opportunities for EE in the various industry sub-sectors - <a href="http://www.ipcc-wg3.de/assessment-reports/fourth-assessment-report/files-ar4/Chapter07.pdf">http://www.ipcc-wg3.de/assessment-reports/fourth-assessment-report/files-ar4/Chapter07.pdf</a></p>	Agreed – the FSP will partner to the maximum degree possible – particularly with the need to secure the required co-funding.



**REQUEST FOR CEO ENDORSEMENT**  
**PROJECT TYPE: Full-sized Project**  
**TYPE OF TRUST FUND: GEF Trust Fund**

For more information about the GEF, visit [TheGEF.org](http://TheGEF.org)

**ANNEX C: STATUS OF IMPLEMENTATION OF PROJECT PREPARATION ACTIVITIES AND THE USE OF FUNDS<sup>9</sup>**

A. PROVIDE DETAILED FUNDING AMOUNT OF THE PPG ACTIVITIES FINANCING STATUS IN THE TABLE BELOW:

PPG Grant Approved at PIF: US\$50,000			
<i>Project Preparation Activities Implemented</i>	<i>GEF/LDCF/SCCF/NPIF Amount (\$)</i>		
	<i>Budgeted Amount</i>	<i>Amount Spent to date</i>	<i>Amount Committed</i>
Collection and analysis of supplemental and baseline data	10,000	6,500	0
Stakeholder and partner consultations	20,000	20,500	0
Initial scoping of Energy Sector Mapping and Benchmarking mechanisms and operational arrangements	5,000	4,500	0
Project strategy and implementation detailing	15,000	16,900	1,600
<b>Total</b>	<b>50,000</b>	<b>48,400</b>	<b>1,600</b>

<sup>9</sup> If at CEO Endorsement, the PPG activities have not been completed and there is a balance of unspent fund, Agencies can continue undertake the activities up to one year of project start. No later than one year from start of project implementation, Agencies should report this table to the GEF Secretariat on the completion of PPG activities and the amount spent for the activities.

**ANNEX D: CALENDAR OF EXPECTED REFLOWS (if non-grant instrument is used)**

*Provide a calendar of expected reflows to the GEF/LDCF/SCCF/NPIF Trust Fund or to your Agency (and/or revolving fund that will be set up)*

Not applicable.



**REQUEST FOR CEO ENDORSEMENT**  
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**TYPE OF TRUST FUND: GEF Trust Fund**

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**ANNEX E: PROJECT IMPLEMENTATION TIMELINE**

Timelines for IEE Phase II																	
		Year one				Year two				Year three				Year four			
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
<b>Component 1</b>	Data quality improvement to facilitate data rich IEE and energy management policy implementation																
<b>Output 1.1</b>	Energy consumption/intensity and potential for EnMS and ESO mapped																
<b>Output 1.2</b>	EnMS and ESO best practice technology and process benchmarks																
<b>Component 2</b>	Strengthening Policy Implementation and Support Frameworks for EnMS, ESO and Energy Management Standards																
<b>Output 2.1</b>	Targeted technical assistance and capacity building to enhance and implement IEE policies																
<b>Output 2.2</b>	Support to operationalise ISO 50001 family and advisory support and recommended actions																
<b>Output 2.3</b>	Training courses and support tools for ISO 50001 family																
<b>Component 3</b>	Mainstreaming EnMS and ESO training programmes																
<b>Output 3.1</b>	Expanded Engineer level EnMS and ESO capacity building developed and delivered incl. new ESO topics																
<b>Output 3.2</b>	Technician level EnMS and ESO courses developed and delivered incl. vocational level course modules																
<b>Output 3.3</b>	NQF Compliant training courses provided to, and capacitation of, Training Providers and Professional assoc.																
<b>Component 4</b>	Investment Promotion in Industrial Energy Efficiency through demonstration of EnMS and ESO and support to access financial mechanisms and incentives in industry and selected commercial sectors.																
<b>Output 4.1</b>	EnMS and ESO Demonstration programme of 150 individual enterprises																
<b>Output 4.2</b>	Support to industrial enterprises through a match making mech. and other assistance programmes																
<b>Output 4.3</b>	Targeted technical support to FIs/IFIs and Government providers of IEE finance																
<b>Component 5</b>	EnMS and ESO awareness, promotion, service demand generation and lessons sharing																
<b>Output 5.1</b>	Holistic communications strategy																
<b>Output 5.2</b>	Communication and outreach activities																
<b>Component 6</b>	Project Monitoring and Evaluation																
<b>Output 6.1</b>	Monitoring and Evaluation (M&E) mechanism																
<b>Output 6.2</b>	Mid-term and final project evaluations																

*Note – A detailed Work Plan per Component/Output/Activity will be developed during the inception phase (with subsequent connection to the Monitoring protocols and procedures to be established.*



**REQUEST FOR CEO ENDORSEMENT**  
**PROJECT TYPE: Full-sized Project**  
**TYPE OF TRUST FUND: GEF Trust Fund**

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**ANNEX F: GEF GRANT PROJECT BUDGET**

Output Based Budget for the GEF Grant						
GEF Grant Budget Component 1.0						
Component 1.0 - Data Quality Improvement to Facilitate Data Rich Industrial Energy Efficiency and Energy Management Policy Implementation	Type of Expense	Yr 1 US\$	Yr 2 US\$	Yr 3 US\$	Yr 4 US\$	Output Total US\$
<b>Output 1.1 - Energy consumption/performance mapped with the savings potential, potential penetration and main challenges of EnMS and ESO in line with ISO 50006 methodologies within selected industrial and commercial sectors</b>	International Expertise	6,100	6,100	6,100	6,100	24,400
	Local Travel	0	0	0	0	0
	National Expertise	28,800	28,800	28,800	28,800	115,200
	Contractual Arrangement	30,000	30,000	30,000	30,000	120,000
	Training/Workshops	1,250	1,250	1,250	1,250	5,000
	International Meetings/Workshops	0	0	0	0	0
	Equipment	0	0	0	0	0
	Miscellaneous	0	0	0	0	0
	<b>Output sub-total</b>	<b>66,150</b>	<b>66,150</b>	<b>66,150</b>	<b>66,150</b>	<b>264,600</b>
	<b>Output 1.2 - Country specific EnMS and ESO best practice technology and process benchmarks established in line with NEES and NEEAP</b>	International Expertise	20,000	0	0	0
Local Travel		0	0	0	0	0
National Expertise		6,500	11,500	11,500	11,500	41,000
Contractual Arrangement		5,000	20,000	20,000	20,000	65,000
Training/Workshops		5,650	1,250	1,250	1,250	9,400
International Meetings/Workshops		0	0	0	0	0
Equipment		0	0	0	0	0
Miscellaneous		0	0	0	0	0
<b>Output sub-total</b>		<b>37,150</b>	<b>32,750</b>	<b>32,750</b>	<b>32,750</b>	<b>135,400</b>
<b>TOTAL Component 1.0</b>		<b>103,300</b>	<b>98,900</b>	<b>98,900</b>	<b>98,900</b>	<b>400,000</b>
GEF Grant Budget Component 2.0						
Component 2.0 - Strengthening Policy Implementation and Support Frameworks for EnMS, ESO and Energy Management Standards	Type of Expense	Yr 1 US\$	Yr 2 US\$	Yr 3 US\$	Yr 4 US\$	Output Total US\$
<b>Output 2.1 - Targeted technical assistance and capacity building to enhance and implement IEE policies, incentives and regulatory frameworks supporting EnMS and ESO uptake and strengthening the coordination of associated activities across government agencies</b>	International Expertise	12,500	12,500	12,500	12,500	50,000
	Local Travel	0	0	0	0	0
	National Expertise	60,000	60,000	60,000	60,000	240,000
	Contractual Arrangement	0	0	0	0	0
	Training/Workshops	6,000	6,000	6,000	6,000	24,000
	International Meetings/Workshops	0	0	0	0	0
	Equipment	0	0	0	0	0
	Miscellaneous	5,000	5,000	5,000	5,000	20,000
	<b>Output sub-total</b>	<b>83,500</b>	<b>83,500</b>	<b>83,500</b>	<b>83,500</b>	<b>334,000</b>
	<b>Output 2.2 - Assistance to operationalize SANS/ISO 50001 with additional advisory support, and recommended actions for Government and Standards Bodies to introduce and scale-up Energy Audit (ISO 50002); Conformity Assessment (ISO 50003); and Energy Baselines and Performance Indicators (ISO 50006)</b>	International Expertise	2,000	2,000	2,000	0
Local Travel		3,000	3,000	3,000	3,000	12,000
National Expertise		2,000	4,000	4,000	2,000	12,000
Contractual Arrangement		10,000	10,000	10,000	10,000	40,000
Training/Workshops		5,000	15,000	15,000	10,000	45,000
International Meetings/Workshops		0	0	0	0	0
Equipment		0	0	0	0	0
Miscellaneous		2,500	5,000	5,000	2,500	15,000
<b>Output sub-total</b>		<b>24,500</b>	<b>39,000</b>	<b>39,000</b>	<b>27,500</b>	<b>130,000</b>
<b>Output 2.3 - Training courses with supporting tools for the ISO 50001 series to assist in the introduction of Energy Audit (SANS 50002), Conformity Assessment (ISO 50003) and Energy Baselines and Performance Indicators (ISO 50006) as well as promote increased M&amp;V and uptake of SANS 50010</b>		International Expertise	15,000	15,000	10,000	4,000
	Local Travel	2,000	5,000	5,000	5,000	17,000
	National Expertise	5,000	10,000	5,000	5,000	25,000
	Contractual Arrangement	50,000	30,000	15,000	8,000	103,000
	Training/Workshops	12,000	15,000	15,000	5,000	47,000
	International Meetings/Workshops	10,000	10,000	0	0	20,000
	Equipment	10,000	5,000	0	0	15,000
	Miscellaneous	5,000	5,000	2,500	2,500	15,000
	<b>Output sub-total</b>	<b>109,000</b>	<b>95,000</b>	<b>52,500</b>	<b>29,500</b>	<b>286,000</b>
	<b>TOTAL Component 2.0</b>	<b>217,000</b>	<b>217,500</b>	<b>175,000</b>	<b>140,500</b>	<b>750,000</b>
GEF Grant Budget Component 3.0						
Component 3.0 - Mainstreaming EnMS and ESO Training and Skills Development Programmes	Type of Expense	Yr 1 US\$	Yr 2 US\$	Yr 3 US\$	Yr 4 US\$	Output Total US\$
<b>Output 3.1 - Expanded Engineer-Level EnMS and ESO Industry Capacity Building courses developed and delivered including new professionally recognized ESO topics, graduate mentorship and SME EnMS Implementation Guide resource packages and learning materials</b>	International Expertise	125,000	120,000	120,000	50,000	415,000
	Local Travel	10,000	10,000	10,000	5,000	35,000
	National Expertise	15,000	15,000	15,000	10,000	55,000
	Contractual Arrangement	50,000	80,000	80,000	30,000	240,000
	Training/Workshops	20,000	20,000	20,000	15,000	75,000
	International Meetings/Workshops	0	0	0	0	0
	Equipment	50,000	50,000	50,000	50,000	200,000
	Miscellaneous	10,000	10,000	10,000	10,000	40,000
	<b>Output sub-total</b>	<b>280,000</b>	<b>305,000</b>	<b>305,000</b>	<b>170,000</b>	<b>1,060,000</b>
	<b>Output 3.2 - EnMS and ESO Technician-Level Courses developed and delivered with supporting bridging courses for enterprise staff as well as development of Vocational EnMS and ESO Training Course Modules and supporting materials</b>	International Expertise	0	0	0	0
Local Travel		5,000	5,000	5,000	5,000	20,000
National Expertise		10,000	10,000	10,000	10,000	40,000
Contractual Arrangement		40,000	40,000	40,000	40,000	160,000
Training/Workshops		15,000	15,000	15,000	15,000	60,000
International Meetings/Workshops		0	0	0	0	0
Equipment		0	0	0	0	0
Miscellaneous		5,000	5,000	5,000	5,000	20,000
<b>Output sub-total</b>		<b>75,000</b>	<b>75,000</b>	<b>75,000</b>	<b>75,000</b>	<b>300,000</b>
<b>Output 3.3 - Institutionalized and National Qualifications Framework (NQF) Compliant EnMS and ESO training course materials developed and provided to the commercial Training Providers combined with targeted capacity building and market development initiatives as well as assistance to establish a Green Industry Professional Association</b>		International Expertise	0	0	0	0
	Local Travel	15,000	15,000	10,000	10,000	50,000
	National Expertise	40,000	40,000	40,000	30,000	150,000
	Contractual Arrangement	70,000	70,000	70,000	50,000	260,000
	Training/Workshops	15,000	40,000	20,000	10,000	85,000
	International Meetings/Workshops	0	0	0	0	0
	Equipment	0	0	0	0	0
	Miscellaneous	15,000	10,000	10,000	10,000	45,000
	<b>Output sub-total</b>	<b>155,000</b>	<b>175,000</b>	<b>150,000</b>	<b>110,000</b>	<b>590,000</b>
	<b>TOTAL Component 3.0</b>	<b>510,000</b>	<b>555,000</b>	<b>530,000</b>	<b>355,000</b>	<b>1,950,000</b>

		GEF Grant Budget Component 4.0				
Component 4.0 - Investment promotion in IEE through EnMS and ESO demonstration, and financial mechanism and incentive access support for industry and selected commercial sectors	Type of Expense	Yr 1 US\$	Yr 2 US\$	Yr 3 US\$	Yr 4 US\$	Output Total US\$
<b>Output 4.1 - EnMS and ESO demonstration programme of 150 individual enterprises (50 large, 100 SMEs) across multiple industrial and selected commercial sectors</b>	International Expertise	20,000	20,000	16,000	5,000	61,000
	Local Travel	10,000	10,000	10,000	10,000	40,000
	National Expertise	40,000	40,000	40,000	40,000	160,000
	Contractual Arrangement	175,000	175,000	175,000	175,000	700,000
	Training/Workshops	10,000	10,000	10,000	5,000	35,000
	International Meetings/Workshops	0	0	0	0	0
	Equipment	0	0	0	0	0
	Miscellaneous	5,000	10,000	10,000	5,484	30,484
	<b>Output sub-total</b>	<b>260,000</b>	<b>265,000</b>	<b>261,000</b>	<b>240,484</b>	<b>1,026,484</b>
<b>Output 4.2 - Support to industrial enterprises through a financial proposal advice/match-making support mechanism and other assistance programmes to assist access to, and understanding of, IEE private sector financing and Government financial incentive programmes</b>	International Expertise	0	0	0	0	0
	Local Travel	10,000	10,000	10,000	5,000	35,000
	National Expertise	60,000	60,000	30,000	30,000	180,000
	Contractual Arrangement	10,000	0	0	0	10,000
	Training/Workshops	20,000	20,000	10,000	10,000	60,000
	International Meetings/Workshops	0	0	0	0	0
	Equipment	0	0	0	0	0
	Miscellaneous	5,000	5,000	5,000	5,000	20,000
	<b>Output sub-total</b>	<b>105,000</b>	<b>95,000</b>	<b>55,000</b>	<b>50,000</b>	<b>305,000</b>
<b>Output 4.3 - Targeted technical support to FIs/IFIs and Government providers of IEE finance to develop, enhance access and evolve funding mechanisms, incentives and financial packages/credit streams for industrial enterprises implementing EnMS and ESO measures</b>	International Expertise	15,000	25,000	10,000	0	50,000
	Local Travel	5,000	5,000	5,000	5,000	20,000
	National Expertise	10,000	20,000	10,000	5,000	45,000
	Contractual Arrangement	10,000	10,000	10,000	10,000	40,000
	Training/Workshops	10,000	20,000	20,000	5,000	55,000
	International Meetings/Workshops	0	0	0	0	0
	Equipment	0	0	0	0	0
	Miscellaneous	10,000	10,000	10,000	5,000	35,000
	<b>Output sub-total</b>	<b>60,000</b>	<b>90,000</b>	<b>65,000</b>	<b>30,000</b>	<b>245,000</b>
<b>TOTAL Component 4.0</b>		<b>425,000</b>	<b>450,000</b>	<b>381,000</b>	<b>320,484</b>	<b>1,576,484</b>
		GEF Grant Budget Component 5.0				
Component 5.0 - EnMS and ESO Awareness, Promotion, Service Demand Generation and Lessons Sharing	Type of Expense	Yr 1 US\$	Yr 2 US\$	Yr 3 US\$	Yr 4 US\$	Output Total US\$
<b>Output 5.1 - Holistic Awareness and Communications Strategy to increase awareness and showcase the benefits of implementing EnMS and ESO methodologies</b>	International Expertise	0	0	0	0	0
	Local Travel	6,000	0	6,000	0	12,000
	National Expertise	2,000	0	2,000	2,000	6,000
	Contractual Arrangement	5,000	0	5,000	5,000	15,000
	Training/Workshops	2,000	0	2,000	0	4,000
	International Meetings/Workshops	0	0	0	0	0
	Equipment	2,000	1,000	2,000	1,000	6,000
	Miscellaneous	2,500	1,000	2,500	1,000	7,000
	<b>Output sub-total</b>	<b>19,500</b>	<b>2,000</b>	<b>19,500</b>	<b>9,000</b>	<b>50,000</b>
<b>Output 5.2 - Communication and awareness outreach activities to promote uptake of policy frameworks, standards, learning circles, financing opportunities, training and capacity building activities, and EnMS and ESO</b>	International Expertise	0	5,000	5,000	10,000	20,000
	Local Travel	15,000	15,000	15,000	15,000	60,000
	National Expertise	15,000	15,000	15,000	15,000	60,000
	Contractual Arrangement	55,000	55,000	55,000	55,000	220,000
	Training/Workshops	30,000	30,000	30,000	30,000	120,000
	International Meetings/Workshops	10,000	10,000	10,000	10,000	40,000
	Equipment	0	0	0	0	0
	Miscellaneous	45,000	45,000	45,000	45,000	180,000
	<b>Output sub-total</b>	<b>170,000</b>	<b>175,000</b>	<b>175,000</b>	<b>180,000</b>	<b>700,000</b>
<b>TOTAL Component 5.0</b>		<b>189,500</b>	<b>177,000</b>	<b>194,500</b>	<b>189,000</b>	<b>750,000</b>
		GEF Grant Budget Component 6.0				
Component 6.0 - Project Monitoring and Evaluation	Type of Expense	Yr 1 US\$	Yr 2 US\$	Yr 3 US\$	Yr 4 US\$	Output Total US\$
<b>Output 6.1 - Monitoring and Evaluation (M&amp;E) mechanism established with regular monitoring exercises conducted, PIRs prepared and tracking tools prepared according to GEF requirements.</b>	International Expertise	0	0	0	0	0
	Local Travel	0	0	0	0	0
	National Expertise	0	0	0	0	0
	Contractual Arrangement	10,000	30,000	0	0	40,000
	Training/Workshops	0	0	0	0	0
	International Meetings/Workshops	0	0	0	0	0
	Equipment	0	0	0	0	0
	Miscellaneous	0	0	0	0	0
	<b>Output sub-total</b>	<b>10,000</b>	<b>30,000</b>	<b>0</b>	<b>0</b>	<b>40,000</b>
<b>Output 6.2 - Mid-term and final project evaluations conducted; M&amp;E facilitated and evolving project 'Theory of Change' over the project's lifetime. IA half yearly and annual review and reports and post project completion impact assessment(s).</b>	International Expertise	0	0	0	0	0
	Local Travel	0	0	0	0	0
	National Expertise	0	0	0	0	0
	Contractual Arrangement	0	0	0	60,000	60,000
	Training/Workshops	0	0	0	0	0
	International Meetings/Workshops	0	0	0	0	0
	Equipment	0	0	0	0	0
	Miscellaneous	0	0	0	0	0
	<b>Output sub-total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>60,000</b>	<b>60,000</b>
<b>TOTAL Component 6.0</b>		<b>10,000</b>	<b>30,000</b>	<b>0</b>	<b>60,000</b>	<b>100,000</b>

		GEF Grant Budget Project Management Cost (PMC)				
Project Management Cost (PMC)	Type of Expense	Yr 1 US\$	Yr 2 US\$	Yr 3 US\$	Yr 4 US\$	Output Total US\$
	International Expertise	30,000	30,000	30,000	30,000	120,000
	Local Travel	3,000	3,000	3,000	3,000	12,000
	National Expertise	18,000	18,000	18,000	18,000	72,000
	Contractual Arrangement	0	0	0	0	0
	Training/Workshops	0	0	0	0	0
	International Meetings/Workshops	0	0	0	0	0
	Equipment	3,000	0	3,000	0	6,000
	Miscellaneous	10,000	10,000	10,000	10,000	40,000
<b>TOTAL PMC Management Project Cost</b>		<b>64,000</b>	<b>61,000</b>	<b>64,000</b>	<b>61,000</b>	<b>250,000</b>

GEF Grant Budget Project Management Cost (PMC)					
Total Project Cost	Yr 1	Yr 2	Yr 3	Yr 4	Project Total
	1,518,800	1,589,400	1,443,400	1,224,884	5,776,484

Budget Line Summary					
Type of Expense	Yr 1 US\$	Yr 2 US\$	Yr 3 US\$	Yr 4 US\$	BL TOTAL US\$
International Expertise	245,600	235,600	211,600	117,600	810,400
Local Travel	84,000	81,000	82,000	66,000	313,000
National Expertise	312,300	332,300	289,300	267,300	1,201,200
Contractual Arrangement	510,000	620,000	510,000	433,000	2,073,000
Training/Workshops	151,900	193,500	165,500	113,500	624,400
International Meetings/Workshops	20,000	20,000	10,000	10,000	60,000
Equipment	65,000	56,000	55,000	51,000	227,000
Miscellaneous	120,000	121,000	120,000	106,484	467,484
<b>Output sub-total</b>	<b>1,508,800</b>	<b>1,659,400</b>	<b>1,443,400</b>	<b>1,164,884</b>	<b>5,776,484</b>

Type of Consultant	US\$
International Consultants	810,400
National Consultants	1,201,200

## ANNEX G: SOUTH AFRICAN ENERGY EFFICIENCY LEGISLATION AND INCENTIVES

Legislation	Brief Description
Energy White Paper of 1998	This paper identifies the need for demand side management and the development and promotion of EE in South Africa. It requires energy policies to consider 'energy efficiency and energy conservation' within the integrated Resource Planning (IRP) framework from both supply and demand side in meeting energy service needs.
National Energy Efficiency Strategy for South Africa 2005(NEES), Reviewed 2008	NEES sets out a national target for EE of at least 12% by 2015 with sectoral targets ranging from 9% for transport, through to 15% for Industry, commerce and the public sector.
Electricity Regulation Act (Act 4 of 2006)	The Act established a national regulatory framework for the electricity supply industry which made the National Energy Regulator (NERSA) the custodian and enforcer of the national electricity regulatory framework and Initiatives.
National Energy Act(Act 34 of 2008)	The National Energy Act was legislated to ensure that diverse energy resources are available, in sustainable quantities and at affordable prices, to the South African economy in support of economic growth and poverty alleviation, taking into account environmental management requirements and interactions amongst economic sectors. This act makes provision for the development of the Integrated Energy Plan and the formation of the South African National Energy Development Institute (SANEDI), whose functions are to undertake energy efficiency measures as directed by the Minister to increase EE throughout the economy to increase the gross domestic product per unit of energy consumed, and to optimise the utilisation of finite energy resources.
Integrated resource plan (IRP) 2010	The IRP 2010's revised balanced scenario sets out specific targets for renewable energy and EE. The IRP provides insight into the proposed new build options including renewable, as well as the energy savings expected from Demand Side Management Programmes.
Industrial Policy Action Plan (IPAP2) 2012/2013 – 2013/14	IPAP2 aims to better align trade and industry policies for certain industries of which five new main groups of focus will be targeted amongst the new groups are the green and energy saving industries
Industrial Policy Action Plan (IPAP) 2014/2015, Released by the dti for public comment 2012	IPAP 2014/2015 includes the Manufacturing Competitiveness Enhancement Programme (MCEP) that will provide enhanced manufacturing support. The Production Incentive (PI) programme will include a Green Technology Upgrading Grant of between 30-50% for investments in technology and processes that improve EE and greener production processes.
Income Tax Act – Regulations on tax allowances for Energy Efficiency Savings	S12I allows for additional depreciation allowances up to 55% for Greenfield projects over R200 million, one of the rating criteria being energy efficiency savings. S12L provides a tax deduction to a taxpayer who is energy efficient, with a focus on renewable energy.  Other tax allowances that are applicable to business include S12C, S11e, S13 and others that provide general depreciation of asset allowances that are applicable not only to ESCO businesses, but also to any business that meets the section requirements.

<b>Legislation</b>	<b>Brief Description</b>
Building Regulations & Building Code (SANS 10400-XA:2011) with SANS 204	The regulations require construction standards on EE and energy use in the built environment, with all new buildings requiring energy efficiency initiatives prior to municipal approval.
SANS 941: Energy efficiency of electrical and electronic apparatus	This standard covers EE requirements, measurement methods and EE labelling of electrical and electronic apparatus, thus impacting manufacturers and importers.
Carbon Taxes- 2013/2014	It is envisaged that a carbon tax, proposed by the National Treasury, will be implemented in 2013/2014 at a rate of R120 per ton of carbon dioxide equivalent (CO <sub>2</sub> eq) on direct emissions and will increase by 10% p.a. until 2020.
Gazetted energy tax incentive regulations	The National Treasury, and the Department of Energy have gazetted Energy Efficiency Tax Incentive Regulations that will incentivize investment in EE measures and these should be finalized at the end of 2012.

**Source:** SANEDI 2014, available at: <http://www.sanedi.org.za/energy-efficiency-legislation-and-incentives/>

## **ANNEX H: HIGH ENERGY INTENSITY SELECTED COMMERCIAL SECTORS**

The commercial sector target group of the GEF Project is defined from initial experiences developed under the SA IEE Project with the group including a range companies and installations with significant energy consumption and the potential to increase energy efficiency under the EnMS and ESO methodologies. From the experience of the SA IEE Project, the commercial sector target group will include:

- Large retail and food outlets
- Data centres
- Large complexes such as shopping malls
- Hospitals and airports
- Distribution centres and logistics companies
- Pumping stations and other strategic municipal and national facilities (which are given priority supply during power outages and are often energy inefficient).

## **ANNEX I: CALCULATION OF GHG BENEFITS:**

### **Calculation of greenhouse gas benefits of the project: Industrial Energy Efficiency Improvement through Mainstreaming the Use of Energy Management Systems and Energy Systems Optimization**

To assess the greenhouse gas benefits of this project, we have used the demonstration and diffusion module of the GEF methodology for calculating GHG emission savings for energy efficiency projects. For this, we have used the spreadsheet tool provided by the GEF. We have, however, made some modifications to the standard methodology explained below.

#### **Emission factors**

The main challenge in assessing the GHG benefits of the project was estimating the reductions that would result from the implementation of an energy management system or energy systems optimization in an enterprise. Data on such reductions was available from the earlier “Industrial Energy Efficiency Improvement in South Africa Project (SA IEE Project)”. Three types of enterprises were identified that were treated separately: large energy intensive enterprises, large enterprises and SMEs. For each type of enterprise we calculated the average annual emission reductions a company achieves after implementation of energy efficiency measures.

#### *Large energy intensive enterprises:*

In the earlier project, a large fraction of the emission reductions achieved were achieved in two large, energy intensive enterprises - the Saldanha Works of steel producer ArcelorMittal and Idwala Lime. Each of these achieved emission reductions of well over 150,000 tons CO<sub>2</sub> per year. We have assumed that in the current project, two enterprises will participate which have potential emission reductions in the order of magnitude of 100,000 tons CO<sub>2</sub> per year each.

#### *Large enterprises:*

The large enterprises that have implemented energy efficiency measures in the earlier project have, for the last four years, been reporting on the energy and CO<sub>2</sub> emission savings achieved. These savings are the result of the optimization of a number of different types of energy systems in each company:

- Chiller System
- Compressed Air
- Fans System
- HVAC Systems
- Lighting
- Motors & Drive System
- Operational / Process changes
- Process Heating
- Refrigeration Systems
- Steam System
- Water Heating

In each of these systems, a different proportion of energy is used from each type of energy source out of the set of possible energy sources:

- Electricity
- Fuel Oils
- Coal
- Biomass
- LPG

- Renewables
- Co-generation incl. Waste Heat Recovery
- Tri-generation

We have calculated the average annual emission reductions reported by 22 large enterprises reporting on EnMS and ESO implementation. The outliers ArcelorMittal and Idwala Lime were excluded from the average, since these are treated in the separate category of energy intensive large enterprises.

*SMEs:*

Participating SMEs came from a number of sectors:

- Agro-Processing
- Automotive
- Chemicals, Plastics and Pharmaceuticals
- Metal Allieds and Engineering
- Manufacturing General
- Pulp and Paper
- Clothing, Textiles, Leather and Footwear
- Commercial Buildings

Possible savings were assessed in 227 companies, 81 of which then went on to implement the energy efficiency measures identified.

The steps followed in calculating the average annual emission reductions for SMEs are as follows:

1. The projected energy savings identified in assessments of the companies in each sector were used to calculate average projected annual energy savings for an SME
2. The contribution of the various energy systems and sources to energy efficiency opportunities identified in the SME energy assessments, along with actual SME implementation of recommended energy performance opportunities, were used with the emission factors of the fuels as given in the GEF tool to calculate the average emission reductions per SME.

### **Calculation of indirect top-down impacts**

The calculation of indirect top-down impacts was done as follows:

1. The CO<sub>2</sub> emissions from industry projected in the IEAs New Policies Scenario for South Africa were used as baseline.
2. We assumed that the total market potential for indirect impacts of the project stands at 2.5% of the sector's emissions in the baseline.
3. A causality factor of 50% was chosen, reflecting the fact that the previous industrial energy efficiency project has already engendered significant activity in the sector.

### **Calculation of lifetime primary energy saved**

#### *Large enterprises*

Large companies that implemented energy saving measures in the earlier project have reported on the total annual energy savings achieved. In order to convert these reported savings to primary energy savings we needed the breakdown by type of energy source. The SME energy assessment findings profile served as the basis for determining the proportion of energy systems and energy sources in large companies. Large company case studies capturing implementation results were factored into the determination of the energy system and source contributions. This resulted in a rough estimate that about 75% of the savings were electricity savings and the remaining 25% was mostly coal and fuel oil.

Electricity savings were converted to primary energy savings using a factor of 38% for the efficiency of electricity production in South Africa.

### *SMEs*

For the SMEs, the SME energy assessments were used as the source of the amount of energy saved per company.

To calculate the lifetime energy saved by the project, for both the SMEs and the large companies, average annual savings were calculated from the data, multiplied by the total number of companies of that type that are expected to participate in the project and by the expected lifetime of the intervention, which is 10 years.

For the third category of large, energy intensive companies a conservative estimate was made of secondary annual energy savings per company of 100 million kWh, which may be compared to the reported results of 129 million kWh saved at Arcelor Mittal and 178 million kWh saved at Idwala Lime.