United Nations Development Programme

Country: Namibia

PROJECT DOCUMENT[1]

Project Title: Namibia Energy Efficiency Programme (NEEP) in Buildings

UNDAF Outcome(s): Outcome 2: By 2010/12, livelihoods and food security among most vulnerable groups are improved

UNDP Strategic Plan Primary Outcome: Environment and Sustainable Development: Expanding access to environmental and energy services for the poor

UNDP Strategic Plan Secondary Outcome:

Expected CP Outcome(s): Strengthened capacity of local institutions to manage the environment and expand environment and energy services, especially to the poor.

Expected CPAP Output (s): Promoting Bio-diversity, conservation and renewable energy technologies and environmental education**.** Outcome 1: Improvement of regulations and building codes for energy saving in buildings developed; Outcome 2: Provision of auditing and energy marketing services organization; Outcome 3: Increased institutional capacity and awareness; Outcome 4: monitoring, learning, adaptive feedback & evaluation

Executing Entity/Implementing Partner: Ministry of Mines and Energy (MME), Directorate of Energy

Implementing Entity/Responsible Partners: Polytechnic of Namibia-Renewable Energy and Energy Efficiency Institute (REEEI)

Brief Description

The NEEP in Buildings project is set against a background of rising electricity consumption in Namibia coupled with a growing power deficit in South Africa, the country's main energy supplier. Like most developing countries who are energy importers, the likely increase in future energy costs or disruption in energy supply could jeopardize Namibia's future economic growth. These developments and risks contrast with the limited application of energy-efficient measures and technologies in the country, particularly among local authorities who are the largest single electricity consumers within the domestic/residential sector accounting for almost 50% of current energy consumption. As part of the historical legacy between Namibia and South Africa, Namibia has inherited South Africa's energy-inefficient mind-set, technologies and regulations, as well as suffering from a general lack of awareness regarding the cost advantages of energy-efficient technologies and equipment.

The Government of Namibia is actively exploring ways of enhancing power supply and promoting efficient use of available electricity resources to mitigate economic disruption. Addressing this challenge requires a concerted effort to both increase the available electricity generation (supply-side) and ensure a more efficient utilization of the existing resources (demand-side). The introduction of energy efficiency measures in existing and new buildings can be expected to not only reduce electricity demand (thus saving costs) and improve energy security, but also generate employment in 'green jobs' and serve as a cost-effective GHG emission reduction measure.

The NEEP project's objective is therefore the reduction of Namibia's energy-related GHG emissions through the nationwide adoption of energy-efficient technologies and practices in the commercial and residential building sector, with a focus on government office buildings, hospitals, hotels, schools and possibly a sample of residential buildings. This objective would be achieved through a series of key activities, including: (i) assistance and capacity building to local authorities to formulate appropriate regulations (standards and labeling of building appliances) and adoption of building codes for energy savings; (ii) the provision of auditing and energy marketing services to stimulate the demand and supply of EE services and technology in the country, particularly through the introduction of mandatory audits in public and commercial buildings and subsidized implementation of EE measures in at least 20 existing buildings; and (iii) the strengthening of institutional capacity and knowledge sharing platforms on EE in buildings that will facilitate market transformation and the adoption of EE technologies and best practices.

[1] For UNDP supported GEF funded projects as this includes GEF-specific requirements

Programme Period:	2006-2010/12
Atlas Award ID:	00059936
Project ID:	00075195
PIMS #	PIMS 4110 CC MSP: NEEP Namibia Energy Efficiency Program
Start date:	May 2010
End Date	July 2013
Management Arrangements:	National Execution (NEX)
PAC Meeting Date:	23 March 2010

Total resources required: USD 6,112,000

- Regular(GEF): USD 859,000
- Government: USD 3,094,000
- Other: USD 2,159,000
- In-kind contributions _____

On Behalf of	Signature	Date	Name/Title
Government of Namibia (**National Planning Commission Secretariat**)			Mr. Levi Hungamo Permanent Secretary
Executing Entity/Implementing Partner (**Ministry of Mines and Energy**)			Mr. Joseph Iita Permanent Secretary
United Nations Development Programme (UNDP) Namibia			Ms. Kari Egge Resident Representative

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List of Acronyms and Abbreviations

APR/PIR	Annual Project Review/Project Implementation Reports APR/PIR
CFL	Compact Fluorescent Light
DRFN	Desert Research Foundation of Namibia
DSM	Demand Side Management
ECB	Electricity Control Board
EE	Energy Efficiency
ESI	Electricity Supply Industry
GEF	Global Environment Facility
GHG	Greenhouse Gas
GW	Gigawatt
GWh	Gigawatt-hour
HRDC	Habitat Research and Development Centre
HVAC	Heating, Ventilation and Air Conditioning
INC	Initial National Communication
kW	Kilowatt
M&E	Monitoring and Evaluation
MET	Ministry of Environment and Tourism
MME	Ministry of Mines and Energy
MRLGHRD	Ministry of Regional and Local Government, Housing and Rural Development
MW	Megawatt
MWh	Megawatt-hour
MWT	Ministry of Works and Transport
NCCC	Namibia Climate Change Committee
NEEP	Namibia Energy Efficiency Programme
NGO	Non-Governmental Organization
NHE	National Housing Enterprise
NIA	Namibia Institute of Architects
NMA	Namibian Manufacturers Association
POPP	Programme And Operations Policies And Procedures
Prodoc	UNDP/GEF Project document
RE	Renewable Energy
RED	Regional Electricity Distributor
REEEI	Renewable Energy and Energy Efficiency Institute
SAPP	Southern African Power Pool
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change

Currency Equivalents

(Exchange Rate Effective October, 2009)[2]

Currency Unit	=	Namibia Dollar, NAD
1 NAD	=	0.1409 USD
1 USD	=	7.7504 NAD

[2] Currencies Full Converter, The Economist, www.economist.com.

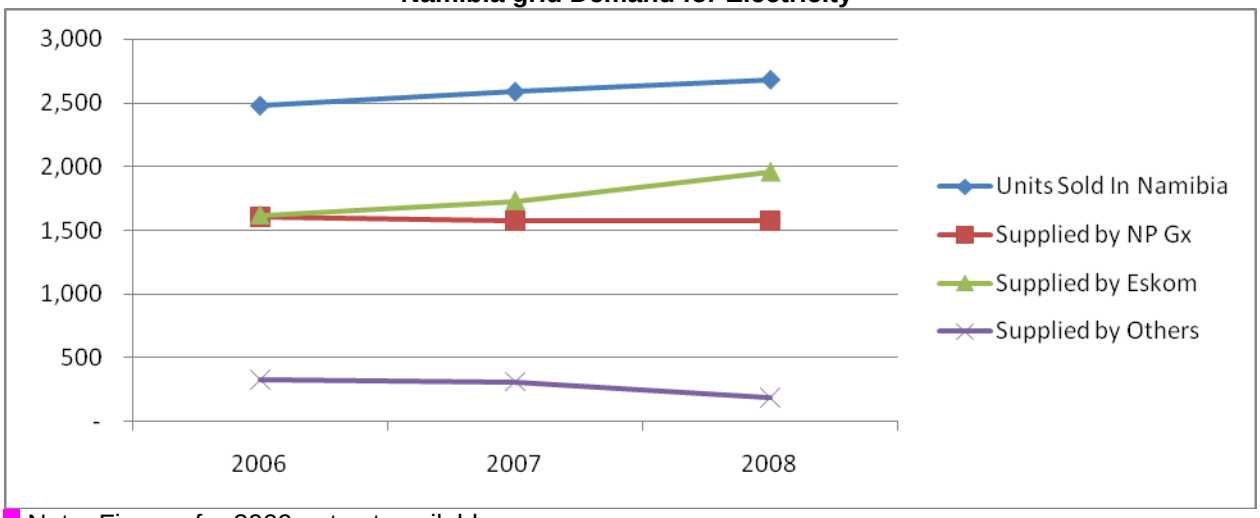
1 SITUATION ANALYSIS

CONTEXT AND GLOBAL SIGNIFICANCE

Environmental Context

1.The Republic of Namibia[3] is a vast country, the 31st largest in the world, and covers an area of about 824,268 square kilometres. The country is located along the South Atlantic coast of Africa and shares borders with South Africa, Angola, Zambia, Botswana and Zimbabwe. Namibia is sparsely populated with only one third of its 2.1 million inhabitants living in urban centres[4]. Namibia is currently experiencing a population growth rate projected at 3% per annum by the Population Reference Bureau.

Namibia grid Demand for Electricity



Note: Figures for 2009 not yet available

Figure 1: Overall Generation Increase in the Namibian Electricity System[5]

2.According to the Electricity Control Board (ECB), total units generated into the Namibian electricity system increased from 3,554 million kWh in 2006 to 3,621 million kWh in 2007 (see Figure 1). Namibia's power utility, NamPower, predicted that residential electricity demand will continue to increase by more than 10% over the course of the coming two to three years. In fact, energy consumption in the entire country has increased by an average of 4% per year between 1997 and 2003, 20% per year between 2003 and 2004, and 13% between 2004 and 2005.

3.In terms of the impacts of climate change, the Initial National Communication (INC) classified Namibia as highly vulnerable to the predicted effects of climate change. Climate change models used during the process predicted that it will become increasingly hotter and drier in Namibia with shorter and less reliable rainy seasons. Droughts will become more frequent. Climate sensitive sectors include agriculture, water, energy, biodiversity, health, tourism and coastal zones.

4.Namibia was estimated to be a net sink for carbon dioxide in 1994 due to the large uptake of carbon dioxide by trees into their woody tissues. The woody biomass in Namibia's vast areas of rangeland is believed to be increasing. Namibia has a relatively small economy with little impact on global emissions (i.e. it contributed less than 0.05% to global CO_2 equivalent emissions in 1994, even when the carbon sink is excluded). The amount of carbon estimated to be taken up by the natural vegetation in Namibia in 1994 constitutes about 0.1% of the total net uptake by land ecosystems throughout the world (IPCC, 2000).

[3] The republic of Namibia : www.grnnet.gov.na.

[4] Population Reference Bureau: http://www.prb.org/ (data for 2008).

[5] Source: Annual Report 2009, the Electricity Control Board

Socioeconomic Context

Population

5.According to preliminary figures from the latest population census in August 2001, Namibia's population grew by 2.6% per annum between 1991 and 2001 to 1,826,854 (National Planning Commission, 2002). Women (51.3%) still outnumber men. The population growth rate declined from 3.1% in 1991 to 2.6% in 2001. A factor contributing to the decline is the spread of HIV/AIDS, as 19.3% of pregnant women are infected with the virus. While only four cases of HIV infection were diagnosed in 1986, AIDS had become the leading cause of death ten years later (Ministry of Health and Social Services, 2001). The impact is already felt via the decline in life expectancy from 56 years in 1995 to 43 years in 2000 (UNDP, 2001). The population is relatively young. In 1997, 42% was under the age of 15 years (UNDP, 1998).

6.Urbanisation in the country is increasing. In 1991 about 32% of the population lived in urban areas (UNDP, 2001). This share has increased over the past nineteen years since cities such as Windhoek, Oshakati, and Ondangwa have grown considerably. Despite the fact that Namibia is sparsely populated by international standards – the average population density is less than two people per square kilometre - population pressure is already considerable in the northern regions. Most (47%) of the population lives in the north-central and north-eastern regions (National Planning Commission, 2002), where the population density is as high as 100 people per square kilometre. Namibia is classified as a lower middle-income country with a real per-capita income of approximately N$8300 in 2001. The Gross National Income in Purchasing Power Parity Prices is estimated at US$6440 for the year 2000 (World Bank, 2002). The average income, however, conceals considerable differences in individual income, which is reflected in the Gini-coefficient of 0.7 (UNDP, 2001).

Natural Resources

7.Namibia's natural resource base includes range and arable land, woodlands, high-value mineral deposits and a large and diverse community of wildlife. Savannah covers 37% of Namibia, dry woodlands and forests 17% while desert vegetation (Namib and Karoo biomes) is distributed over 46% (Barnard, 1998). Less than 2% of the land is arable, because rainfall is limited. Beef and small stock (sheep and goats) production is the most common land use, although game farming and mixed wildlife/livestock production is a fast-growing industry. State controlled protected areas comprise 114079 km^2, or 13.8% of the land surface (Barnard, 1998). The total above ground woody standing stock is estimated as 1618.80 million tons and the mean annual increment is 34 million tons (Errlikä and Siiskonen, 1992).

Tourism

8.Tourism is the third largest contributor to foreign exchange earnings in the country, after mining and fisheries. Most tourists expect an environment-centred experience such as game-viewing, bird-watching, hiking; sport-fishing or trophy-hunting (Figure 1.5). The growth of car hire companies indicates the trend towards independently conducted tours instead of group tours in buses. Since the most scenic sites are scattered across the vast country, tourism is quite transport-intensive. As well as being energy-intensive, most tourism also relies heavily on scarce water resources in arid areas. While Namibia's variety of animals attracts tourists, free roaming animals such as elephants compete with human – in particular subsistence-farmers – for land and water. The declaration of community conservancies tries to reconcile the basic needs of subsistence farmers with the conservation of nature. Communities now benefit from game in their area through tourism promotion, in particular hunting concessions.

Agriculture

9.The agricultural sector consists of two sub-sectors. More than half (52%) of the agricultural land is occupied by some 4 500 commercial farmers with freehold land title (Werner, 2000) who employ about 35 000 labourers. The communal sub-sector consists of about 150 000 small-scale subsistence farmers that obtain land through customary land tenure regimes. The sector's contribution to GDP (5.6% in 2000) was shared by both sub-sectors equally (Central Bureau of Statistics, 2001). Namibia's semi-arid to arid climate does not allow for much intensive agricultural production. Extensive livestock ranching thus dominates, with cattle farming in the northern and central regions and small-stock and ostrich farming in the more arid western, southern and south-western regions (Werner, 2000). Dryland crop production is common in the north and north-eastern parts of the country. While pearl millet is the staple crop in the communal areas, maize is grown in the commercial areas. Wheat production is only possible under irrigation.

Manufacturing

10.The manufacturing sector largely depends on the processing of agricultural (grain and meat processing) products, food and beverages, and fishery products. Mining output is processed to a lesser extent in the country. Diamonds are now being cut and polished at Okahandja and the same as for gemstones. A zinc refinery is operated at the Skorpion Mine. Despite the large number of cattle in the country, a leather industry is emerging slowly There is no significant chemical and metal-working industry in the country. Charcoal production has increased over the past years. The felling of mature indigenous plants (for charcoal production) speeds up the process of bush encroachment by smaller, less valuable shrubs. Exact figures are hard to obtain but estimates of wood used range between 15 000 tons and 50 000 tons per year. Namibia's Industrial Policy aims to increase manufacturing activities to reduce dependency on the primary sector and add value to raw materials.

Fisheries

11.Namibia's fisheries sector is based on the cold Benguela Current. The associated up-welling cells carry nutrients that support fish stocks in Namibian waters. The commercial fishery is based on about 20 different species. Small pelagic (open-water) species (pilchard, anchovy and juvenile mackerel) and lobster are fished along the shallower onshore waters on the continental shelf. Large pelagic species including adult mackerel, demersal (bottom-dwelling) hake and other deep-sea species, such as monkfish, sole and crab, are fished in the waters further offshore. The fisheries and fish processing sectors have contributed over 10% to GDP since 1998, up from 5% in 1991. The combined fisheries and fish processing sector is the third largest of the Namibian economy, behind agriculture and mining, and the second largest export earner, after mining. The demersal fishery, which focuses on bottom-dwelling fish, is the most valuable, with a landed value of N$593 million in 1996. It is estimated that over 85% of Namibia's fish output is for export.

Other economic sectors

12.Government services are the main single contributor to GDP at about 20%. Government has become the major single employer in the country – employing almost 80 000 people – while agriculture is the sector that provides most jobs. Large numbers of ex-combatants have been absorbed into government and the security forces after Independence in 1990. Other import sectors, in terms of contribution to GDP, are wholesale and retail trade and real estate and business services. From the viewpoint of the NEEP in buildings, the construction business contributes significantly to job creation in particular for unskilled workers.

13.GDP grew by 4.1% on average during the period 1994 to 2000, with some fluctuations mainly caused by the economy's dependence on world commodity prices and climatic conditions. Namibia's inflation rate declined from double-digit figures in 1994 – annual average 10.8% - to a low of 6.2% in 1998. The devaluation of the South African Rand, to which the Namibia Dollar (N$) is linked on a one-

to-one basis, as well as oil price increases, have resulted in higher inflation rates in the following years – up to 9.3% in 2001. Since October 2001 inflation has risen from 7.6% (September, 2001) to 10.3% (April, 2002). The devaluation affects imports traded in US$ such as oil and oil products, but also staple foodstuffs such as maize which are priced on import parity prices. On the other hand, exporters gained substantially from higher income and increased competitiveness. Year-on-year inflation fell to 6.7% in November 2009, owing to a sharp drop in food price inflation, which more than offset higher transport inflation. Provided that world oil prices do not rise too sharply with the world economic upturn and inflation in South Africa –from where Namibia imports most of its consumer goods – continues downwards with more stable commodity prices, average inflation is forecast to slow from 8.8% in 2009 to 6.1% in 2010 and 5.7% in 2011.

14. It is expected that economic growth will pick up over the next few years because of new, significant economic investments in the country. This includes the development of the Kudu Gas field. The diversification of the agricultural sector is expected to continue, with higher demand for cotton by the newly established textile industry, an expansion of tobacco plantations, and further investment in horticulture. Investment in labour-intensive industries such as the textile industry will help to reduce unemployment in the country and could alleviate poverty as mainly low-skilled labour would be demanded. Expected investment in the manufacturing sector is not likely to change the GDP composition significantly towards the secondary sector since the primary sector will grow due to developments in the mining and gas industry. Overall mining output should expand by 14% (the government forecasts just 4% growth).

15. Under the current policy settings or Vision 2030, GDP in Namibia is expected to grow at an annual rate of about 4 percent until 2020, and this growth level is expected to continue until 2030.

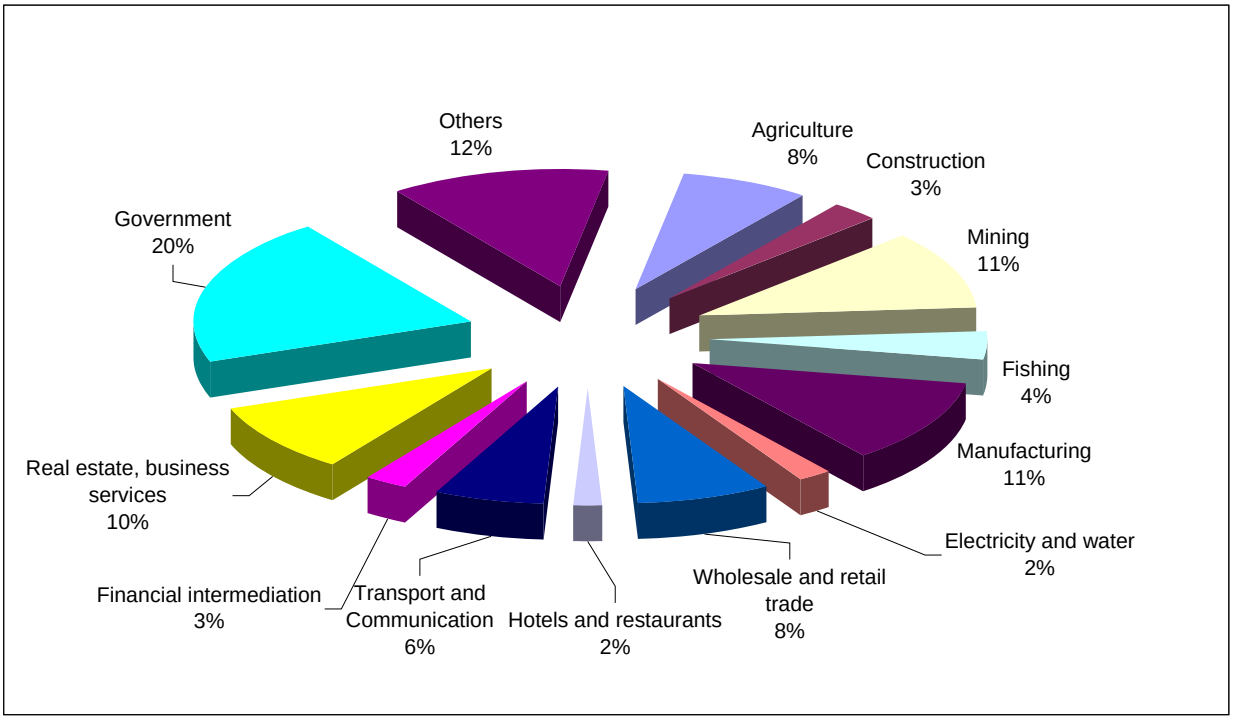


Figure 2: GDP composition in 1994 in % (Source: Central Bureau of Statistics, 2001)

Policy Context

16. The Ministry of Mines and Energy (MME) published the White Paper on the Energy Policy of Namibia[6] in 1998. The White Paper embodied a new, comprehensive energy policy aimed at achieving security of supply, social upliftment, effective governance, investment and growth, economic competitiveness, economic efficiency and sustainability. Policies sought to affect energy demand (mainly households), supply and a number of cross-cutting issues, including energy efficiency and regional energy trade and cooperation.

17. Vision 2030 was adopted in 2003 and Namibia`s Development Plan (NDP) Sections 2 & 3 is based on the directives of the White Paper on Energy Policy of 1998 that seeks to meet development challenges through improved access to RE sources, particularly in rural electrification, rural water supply and solar housing and water heating. Through Vision 2030, it is anticipated that the use of solar water heaters (SWHs) will continue to increase, especially with the recently introduced Cabinet directives of August 2007 on the use of SWHs for all government and parastatal buildings to promote energy efficiency in buildings.

18. The Off-Grid Energisation Master Plan for Namibia (OGEMP) is another Vision 2030 project that was initiated by the UNDP/GEF/MME Barrier Removal to Namibian Renewable Energy Programme (NAMREP). The underlying objective of the OGEMP is to provide access to appropriate energy technologies to everyone living or working in off-grid, pre-grid and ‘‘grey’’ areas.

The White Paper on Energy Policy, under the energy supply section, projects the exploitation and development of the following resources:

- Electricity.
- Upstream oil and gas.
- Downstream gas.
- Downstream liquid fuels.
- Renewable energy.

RE within the policy is clear with regards to the following interventions:

- Institutional and development challenges.
- Institutional and planning framework.
- Human resources development and public awareness.
- Adequate financing schemes for RE applications.
- Inter-ministerial co-operation structure development.
- Energy access improvement in rural areas for households, water supply, and business and public services.
- Rational use of energy in buildings and for water heating.

19. A salient feature of the Namibian economy is that it is energy intensive. Therefore energy efficiency (EE) will be promoted through policies aimed at better information collection and dissemination, particularly with respect to energy efficiency and conservation practices in households, buildings, transport and industry.

[6] White Paper on Energy Policy, Republic of Namibia, Ministry of Mines and Energy, 1998.

20.The White Paper on Energy Policy mentioned that energy efficiency (EE) improvements are to be achieved through (i) improving EE projects access to suitably structured domestic finance, (ii) enhancing the understanding of the costs and benefits of energy-efficient technologies in local financial institutions, (iii) creating a conducive business environment for large-scale EE financing, (iv) reducing technical barriers for Namibian participants to invest in energy-efficient equipment, (v) increasing the awareness of the design principles and benefits of energy-efficient buildings and, (vi) setting up a conducive regulatory framework that promotes energy-efficient technologies, including energy audits.

21.This energy policy set ambitious targets of meeting at least 100 percent of peak demand and at least 75 percent of total electricity requirements from internal sources by 2010, as well as matching Namibia's energy requirements in a cost-effective manner and sourcing 10 percent of the supply from internal RE sources. NamPower has selected various supply and demand options to meet the Namibia's energy requirements driven by the Energy White Paper.

22.In May 2008, a Renewable Energy Policy Paper for NamPower was developed and approved by the Electricity Control Board (ECB). According to this policy, NamPower is expected to intervene in broader areas of wind energy, biomass energy, hybrid mini-grid systems for off-grid areas, solar energy, and skills development in the RE fields. The utility is expecting to reach its first target for RE of about 40MW by the year 2011. As solar energy is a plentiful resource in Namibia, NamPower made the necessary arrangements for the installation of solar water heaters in all government and parastatal buildings.

23.The ECB has similarly embarked on numerous awareness programmes to encourage better electricity usage in Namibia following the development of Demand Side Management (DSM) programmes. The programmes aim at reducing the peak demand during periods where energy-supply systems are constrained, as well as promoting overall electricity efficient use. ECB conducted various awareness programmes in 2007-2008 such as radio and television campaigns and the distribution of 575,800 Compact Fluorescent Light (CFL) bulbs throughout Namibia. The results of the DSM projects were interesting and it is important that DSM is continued to be used to alleviate the current power supply crisis.

24.Namibia's neighbour, South Africa, as part of the Southern African Power Pool (SAPP) has also implemented a number of short-term measures to accelerate the region's power shortage recovery, namely guidelines for effective inter-utility transmission networks connectivity, as well as various supply side and DSM initiatives.

Institutional Context

25.Renewable energy and energy efficiency options are needed in Namibia to achieve security of supply that will translate into economic growth and sustainable development. In order to achieve this goal and to encourage public and private partnerships, the NEEP project has been developed for commercial, institutional and residential buildings. The following actors will play a significant role in the implementation of the EE programme in the building sector.

- **The Ministry of Mines and Energy (MME):** The MME is responsible for ensuring the adequate and affordable energy supply in a sustainable manner taking advantage of Namibia's natural resources in support of the nation's socio-economic development. One of the MME objectives is to promote EE and make sure that increases of energy supply and utilization are sustainable, competitive and economically efficient. The MME has published the Energy White Paper and the DSM Report under the ECB.
- **The Ministry of Environment and Tourism (MET):** The MET has initiated programmes to promote clean production and EE as instruments for the reduction of Greenhouse Gas (GHG) emissions from manufacturing whilst simultaneously addressing the issue of sustainable development. The MET has also been involved in EE promotion in the hospitality sector as well as capacity building for policy makers project that seeks to strengthen the national capacity of Namibia to

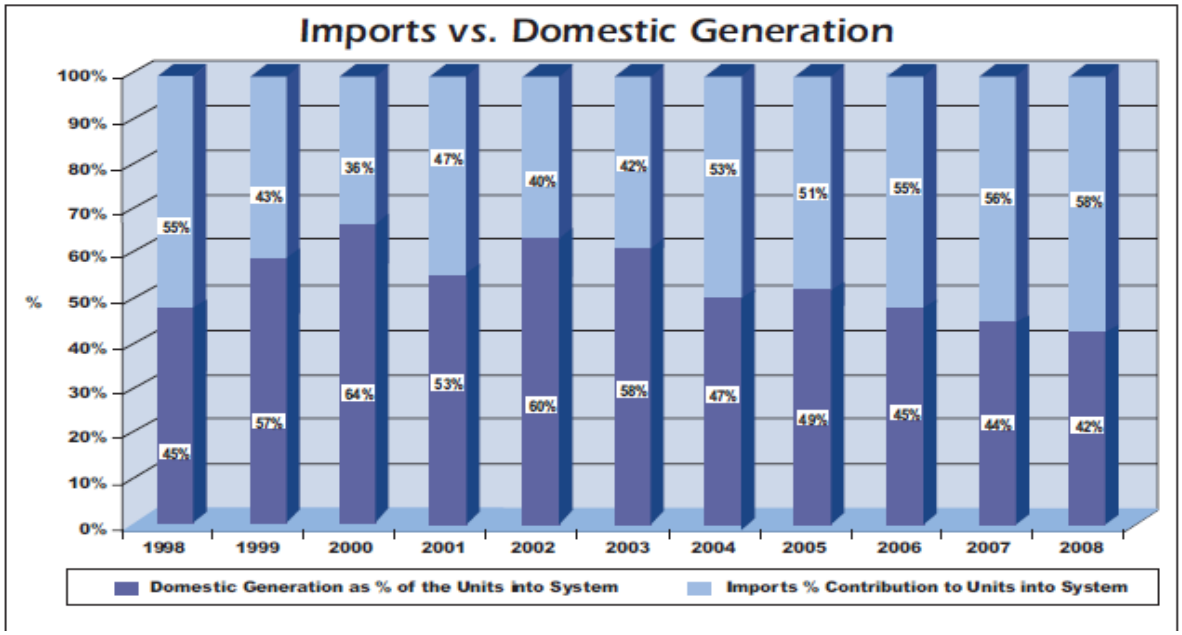
develop policy options for addressing climate change across different sectors and economic activities, which could serve as inputs to negotiating positions under the United Nations Framework Convention on Climate Change (UNFCCC).The national capacity building projects entail:

- Adaptation to Climate Change
- Climate Change Mitigation
- Mitigation Technology Challenges
- Investment and Financial Flows
- National Policies and their linkages to negotiations over a future of Climate Change Agreement
- Key issues on Land Use, Land Use Change and Forestry (LULUCF)

- **The Ministry of Works and Transport (MWT):** The MWT is responsible for developing sectoral policy and regulation, and ensuring infrastructure development and maintenance on Transport and State Asset Management. It also has the mission of building a socio-economic infrastructure and services that realise Namibia's Vision 2030.
- **The Ministry of Regional and Local Government, Housing and Rural Development (MRLGHRD):** The MRLGHRD is committed to facilitating the establishment of an effective regional and local government system that brings government closer to the people and is capable of delivering services to the satisfaction of all communities. In carrying out of this task it provides central government support to regions and local governments in housing, community development and physical planning areas.
- **The Electricity Control Board (ECB):** The ECB is the regulator of the electricity supply industry. Its main focus is to ensure that the industry performs efficiently, promoting affordability and accessibility whilst ensuring long-term sustainability. The ECB has placed great emphasis on EE whilst promoting cost-reflective tariffs and DSM programs.
- **The Renewable Energy & Energy Efficiency Institute (REEEI) of Namibia:** The REEEI is an institute of the Polytechnic of Namibia dedicated to serve as a national information resource base for RE, sustainable energy use and management, and conducting policy research. The institute has provided energy management training and is enhancing its capacity to be able to work more effectively with the private sector in promoting EE and supporting activities on the ground.

DEFINING THE CHALLENGE

26.Namibia is a large energy importer as it is illustrated in figure 3. As mentioned before, the country imports about 56% of its electricity needs from the SAPP member states, of which 89% comes from South Africa. Over 90% of South Africa’s electrical power is from coal-based power generating units. Since the surplus generation capacity in South Africa is running out, Namibia is particularly vulnerable to an electricity supply shortage.



Note: Figures for 2009 not yet available

Figure 3: Comparison of Total Imports against Local Generation[7]

27. According to NamPower, electricity consumption has shown a rising trend from 2,945 GWh per annum in 2005 to 3,219 GWh in 2007. The country's power generating mix and installed capacities consists of the following: Ruacana Hydro Power Station 249 MW, Van Eck Coal Power Station 120 MW, and Walvis Bay-diesel driven Paratus Power Station 24 MW. In addition there are other small numerous diesel power generators operating across the vast country. The existing 246-mw generating capacity of the Ruacana hydroelectric plant on the Namibian side of the Kunene River is to be expanded to 338 mw, with the installation of a fourth, 92-mw turbine unit in March 2012. This will reduce Namibia's reliance on imported electricity to meet its current demand, around half of which is normally supplied by Ruacana (depending on the Kunene's flow rate).

28. Also, in February 2008, the Government of South Africa, Eskom (the power utility), and the mines, reached an agreement that the mines would cut back production immediately by 10% in order to reduce the large amount of load shedding. Having considered the national power outages as a national emergency, the South African government is planning to introduce a power quota or rationing programme. The hope that Gigajoule Africa, a private South African independent power producer, might replace Eskom as offtake customer was dealt a blow in October 2009, when the National Energy Regulator of South Africa turned down Gigajoule's application to build gas distribution and transmission facilities in Western Cape province[8].

29. The current power deficit being experienced by South Africa, Namibia's main supplier – coupled with the increased demand for electricity, the need for extension of rural electrification, and the shortage of human and financial capital for investments in power generation – points to the regional challenges facing Namibia's desire to achieve steady economic growth.

30. The Government of Namibia has developed several initiatives to address these challenges. To mitigate the power supply crisis in the medium to long run, the Ministry of Mines and Energy – in close liaison with NamPower and ECD – embarked on a number of projects including (i) the GEF-supported Namibia Renewable Energy Programme (NAMREP); (ii) Renewable Energy & Energy Efficiency Capacity Building (REEECAP) with Danish support; (iii) the establishment of the Renewable Energy & Energy Efficiency Institute (REEEI); and (iv) the implementation of a solar hybrid mini-grid systems.

[7] Source: Annual Report 2008, the Electricity Control Board

[8] Economist Intelligence Unit, Namibia – County Report, January 2010

The solar hybrid mini-grid system at Tsumkwe is co-funded by European Commission (N$ 20 Million), NamPower (N$ 3 Million) and Otjozondjupa Regional Council (N$ 3 Million). The government similarly attaches great importance to environmental protection, maintenance of ecosystems and ecological services, and utilization of natural resources on a sustainable basis. The national long-term strategy for development, Vision 2030, firmly anchors sustainable development as its cornerstone.

31. The MME, on behalf the Cabinet, is also exploring ways of promoting efficient use of available electricity resources to avert economic disruption. In addition to a concerted effort to increase the available electricity generation (supply-side), the government is also committed to ensure a more efficient utilisation of the existing resources (demand-side). This is the entry point for the project called the Namibia Energy Efficiency Programme (NEEP) in Buildings, which is designed as an effort to encourage energy-efficient technologies and practices mainly in the commercial and residential sectors.

BARRIERS TO PROMOTION OF ENERGY EFFICIENT BUILDINGS

32. The possible barriers that could prevent the implementation of NEEP in buildings have been identified below as follows, taking into consideration Namibia's specific economic and social conditions:

(i) Institutional barriers

33. No single government agency in Namibia has the clear responsibility of promoting EE in all Namibian sectors. The MME as well as the MET are responsible for promoting, facilitating and regulating the sustainable development of Namibia's natural resources and energy resources but this objective is only a small part of their mission statement. Moreover there are only a limited number of national institutions that have the institutional mandate and the technical skills to address EE issues, including establishing national policies and building codes. This constitutes a critical barrier to the design, adoption and implementation of an EE programme in building within a limited timeframe.

34. The lack of a mandate, driver or champion to implement strategic plans has been reported as an area which requires further attention. Also missing is coordination between different government departments, parastatal entities and non-governmental organizations to work together towards achieving pre-set country wide goals. For example, as we understood from major stakeholders, REEEI finalized a strategic RE/EE plan for the country. However the subsequent lack of identifying a champion or a driver to take ownership and assume main responsibility for the implementation of the strategic plan (and further facilitate and co-ordinate with different government and non-government entities) has hampered progress.

35. Integration of EE standards (e.g. minimum insulation requirements, modern building material, solar water heaters, free cooling, EE lighting, etc.) into the Namibian national building code is also a very important step towards ensuring that new buildings and those undergoing major renovations meet minimum EE standards. Most of agencies we visited expressed their opinion that Namibian Standards Institution (NSI) could use additional institutional support to integrate such standards in a timely manner.

36. A Demand-Side Management (DSM) program is currently underway, including a free CFL give-away component. The program does not take advantage of a Program of Activities methodology under the Clean Development Mechanism (CDM). While this decision was made for fast program roll-out the slow implementation reflects the institutional barriers mentioned above.

(ii) Policy barriers

37. As far as we know, there is at present no specific EE policy in Namibia. The only documents that have been published yet are the White Paper on Energy Policy and the DSM report which do not address EE in buildings. The same problem occurs with respect to building codes. Indeed, Namibia currently follows the South African SANS10400 building code which does not include any additional standards for EE in buildings. The lack of an EE strategy for buildings as well as national building codes present a challenge to developing a clear set of objectives for the implementation of an EE in buildings program.

38.Nonetheless there are several positive policy decisions being undertaken by the Government aimed at EE promotion. One example is a directive from the Government to retrofit all existing governmental buildings (including office buildings, hospitals and schools) with Solar Water Heaters (SWHs). On the other hand, as reported during several meetings, this is just one step since Government buildings for example do not use EE lighting and mostly lights are kept on beyond their hours of operation extending to the next working day in many cases. It would be helpful if the government would consider developing a more inclusive policy including other EE aspects like setting minimum EE standards for appliances, energy efficient lighting (like CFLs), and ensuring that equipment and lights are switched off when not needed.

39.Moreover some of the stakeholders expressed their concern that delay or lack of payment from some government agencies of the utility bill does not promote EE. During this project, we recommend looking into the extent and validity of such practices and recommending appropriate practical policy reforms.

40.In an effort to manage the peak load, the Regional Electricity Distributing Companies (REDs) extended time of use rate tariff structures. Another program is offering lower electric rates for customers who agree to a REPRO control program. Under such programs, customers would receive a discounted electric rate in exchange for the utility's direct control of some electric loads like water heating equipment that can be switched off directly and as needed by the utility during peak hours (customers are able to use stored hot water during these periods which require pre-planning). While the REPRO control program is a good policy, enforcing it has proven to be a challenge in some cases when customers unilaterally disable the utility control of their equipment as a way to receive the discounted rate without fulfilling their obligations. Enforcement of such policies and their limitations needs to be revised.

(iii) Legal and regulatory barriers

41.The building sector in Namibia is mostly composed of low-end EE technologies. Regulations are needed in order to set standards for best practices in buildings and to promote more energy-efficient products and material. To date, there is no EE policy that can serve as a legal basis for introducing regulations and building codes to ensure that the energy-efficient technologies meet standards on the market by legislative measures. To this end, the REEEI should coordinate with MME and other government institutions to set up an appropriate legal and regulatory framework to achieve the project priorities. Some examples of what could be done in this respect are:

- Passing new legislation and authoring standards to encourage customers to generate power on their premises from renewable sources (solar, wind, biomass etc.) for their own use and providing the option of safe integration with the utility grid to sell back power to the grid at times when the onsite generated capacity is above the usage at the customer's facility. At present there is no provision for selling power to the grid. During our visit to the Habitat Research and Development Centre (HRDC) building, we were impressed by the state of the art building employing many aspects of innovative design with a number of sustainability features. One aspect was the solar power generation and the built in facility for safely exporting back power to the grid. Up to this point HRDC is providing such power for free as a demonstration.
- Adopting modern building codes by NSI to set new building standards promoting minimum EE standards for new construction as well as buildings undergoing major renovation.
- Using tax incentives to encourage promotion of EE buildings.
- Performing Standards and Labelling and adopting minimum EE requirements of equipment and appliances sold in the Namibian market.

(iv) Technical barriers

42. Building owners and stakeholders that will be involved in the project have limited technical experience in implementing EE technologies and practices in buildings. This is also true in the case of the MME, which will be responsible for improving regulation and building codes for energy savings. In addition, there is a lack of knowledge on the part of the other ministries and organizations associated with the project on how to develop support programmes for the adoption of EE technologies and practices in order to speed up the market transformation process. The local private sector comprised of manufacturers, retailers, designers, engineers and constructors is also held back by the lack of understanding of EE issues for energy consuming equipments in buildings. Without a strong endorsement of EE standards and recommendations in building codes by market players, particularly in the private sector, the proposed regulations will be ignored.

43. Another element to be taken into consideration on a technical level is the fact that higher efficiency products and material for buildings are not always domestically available. One reason is that local engineers, manufacturers, retailers and constructors often have a lack of expertise in the design and marketing of highly EE technologies. This is also partly due to the lack of EE standards in building codes, which allow cheaper and less efficient products to prevail on the market.

44. There are several categories of technical persons or firms involved in the building industry. We would like to outline the main technical barriers for each category:

Architects:

45. Limited knowledge of modern design techniques to maximize efficiency and using building geometry, employing modern building materials to optimize the buildings' energy consumption.

Registered building design engineers and engineering consultants performing energy audits:

46. As part of the design process for buildings, engineers perform calculations of different loads to determine equipment size (e.g. air-conditioning, water heaters etc.). A common practice in many countries including Namibia is to specify larger equipment which is known as over-sizing. Oversized equipment does not lend itself to efficient energy use.

47. Technical knowledge is needed to:

- Specify and utilize appropriate EE equipment such as air handling units with free cooling capabilities using enthalpy economizers, the use of evaporative cooling as an effective air-conditioning alternative, variable frequency drive applications and energy savings calculation etc.
- Understanding the energy auditing concept, the methodology of different energy audit levels like walk-through audits and Investment grade audits.
- Develop knowledge of energy efficiency measures selection to maximize the energy conservation in buildings and technical experience in implementing energy efficient technologies and best practices.
- Understand the importance of performing building energy balance, energy balance approaches and methodology, and energy savings calculation for lighting and HVAC retrofits.
- Knowledge of renewable energy applications and equipment.

Building contractor companies, construction personnel and technicians, building material retailers and handlers:

48. HRDC and several research institutions performed significant work in the area of testing home grown building materials like building bricks, insulation materials etc. The utilization of such materials is very limited because they are not available in the hardware stores and the building technicians do not know how to use them (e.g. brick layers do not know how to most efficiently lay these bricks and the optimal tools to use in that process).

Building maintenance contactors and personnel:

49.There is a lack of knowledge in performing preventative and corrective maintenance for building equipment to ensure optimal energy efficient operation.

(v) Cost barriers

50.Namibia suffers from a general lack of awareness regarding the cost advantages of energy-efficient technologies. Low energy prices in the past have contributed to the energy-inefficient mind-set of the country. Even when end-users understand the rationale for investing in more energy-efficient technologies and become aware of the costs and benefits, they often lack the resources needed to make the upfront investment. Energy-efficient products are often expensive in terms of the initial purchase and, even if this cost is earned back within one or two years, the capital costs still have to be provided upfront. The high initial cost of efficiency equipment and materials influences the mind-set of consumers such as building owners and there is also the issue of the split incentive between business owners and renters (if they are not the same entity).

51.The uncertainty about the cost effectiveness of EE equipments for buildings as well as the market demand for those products also constitutes a barrier, making manufacturers reluctant to dedicate their financial resources to produce more costly technology. This also makes retailers reluctant to stock energy-efficient equipment. Typically, few businesses are willing to provide extra budgets for non-core investments like those for research and development for products improvements so that they are more energy-efficient. EE equipment can be relatively costly, and economies of scale can be challenging to make it work in favour of countries with a relatively small population like the Republic of Namibia.

52.The lack of availability of EE/RE product financing is also a strong barrier. The prime interest rate in Namibia (cost of capital) is at present 11.44% which inhibits the commercial financial viability of EE investments. At present there are available financing facilities such as:

- The Ministry of Mines and Energy (MME) Solar Fund which provides a concessionary 5% interest rate and 5 years loan repayment for solar technology retrofits like photovoltaic, SWH, and small home technology like lighting. The NAD1.2 Million fund is oversubscribed (which is a measure of the large demand and indicator of success). The current backlog is estimated at NAD16 to 19 Million.
- EE/RE funds offered by commercial banks like the First National Bank (FNB) which gives concessionary 3% interest financing for solar and wind related installations. At present the fund is oversubscribed with a backlog of approximately NAD4 Million.

(vi) Awareness and information barriers

53.The current low penetration of EE in commercial and residential building sectors is partly due to the lack of knowledge with regards to improvement opportunities for EE technologies. In Namibia – like in many other countries around the world – contractors, architects, manufacturers, building owners and tenants, and various government agencies are not aware of the cost and long-term benefits of passive and active energy-efficient design. A EE Baseline Survey demonstrated that from the group of local architects surveyed, 17% were not even aware of EE issues in buildings while 67% were conscious of the technology but still not implementing EE measures in their practices. Similarly, financial institutions are not familiar with the particularities of EE financing which results in a reluctance to extend credits for EE products and projects.

54.The average consumer awareness on the cost and benefit of EE is low; as illustration, we present some examples from the Namibian context:

- Consumer awareness is the main issue when it comes to taking decision to acquire EE or RE products. For example NHE offers SWHs and other EE/RE products as options to their new home owners. Many customers make their choices based on upfront cost first versus long term cost savings e.g. electric water heaters where the cost difference will be paid back through energy savings in a reasonable time frame and the added cost is financed as part of the mortgage over 20 years. Awareness in choosing products based on a full cycle cost analysis rather than initial cost plays a major role for making such decisions.

- Negative past experience with EE/RE projects is also an issue, e.g. the project in Okahandja where solar street lights were utilized and did not perform for contracting reasons created a negative perception about using solar street lighting..
- The perceived quality of EE products and the way customers look at technologies, especially what is manufactured locally, are key; aesthetics are sometimes an issue with solar heaters, EE roofs, or solar cookers that are locally produced while green and efficient ones are often not appealing to customers in terms of the choice of colour or shape, Comments like "this thing looks like a coffin" were often heard.
- EE product marketing for a long time has focused on marketing of technologies "for limited income families" creating a customer perception that it is for the poor; using such products can be looked upon as loss of social status which is very important especially in Africa.
- Air conditioning is viewed as a symbol of building status, even with government buyers. We were given the example of a local library where the buyers insisted to have a compressor based central air conditioning and all other options like evaporative cooling and free cooling units were off the table.
- Awareness of using the power of information is underutilized. Case studies with demonstrative savings and benefit data can be very powerful tools for catalyzing a market driven and not government driven EE market.

55. Besides these barriers, the suppliers faced the following specific barriers:

- Flexibility for the suppliers to meet obligations in a cost effective manner, through mechanisms such as banking and borrowing to finance upfront cost of RE & EE..
- Exceptions are there when the RE & EE financing is backed up by securitization of funds / returns through a Government Scheme or Grant from Multi Lateral / Bi Lateral agency.
- Weak balance sheet with respect to profitability and a need to undertake detailed studies that can;
  - Clearly indicate to RE & EE suppliers the benefits of having ''Sanitized Balance Sheet'' (reporting less production / profitability to save tax and duties) in terms of concessions enjoyed and the ''Economic Opportunities Lost'' to have more business and financing.
  - Provide Policy Recommendations to the Government (MME /MoF) on rationalization of taxes & duties on one hand and to review concessions to RE & EE suppliers and importers.
- The equipment manufacturers /suppliers have limited interest even if they have the know-how to produce RE & EE equipment and there is a need for capacity building activities including;
  - Capacity building of various stakeholders in the area of innovative financing mechanisms as cash flow based financing through Special Purpose Vehicles / intermediaries.
  - The creation of RE & EE Manuals and dissemination of RE & EE success stories in clusters that can be commercially utilized by suppliers.
  - Training of more EE auditors as an involvement of all the significant stakeholders in the supply chain to contribute collectively towards achieving the objective of realizing RE & EE potential and allied financing in Namibia as to reduce upfront costs.
- If the EE schemes are backed up by the Government grant e.g. MME`s Solar Revolving Fund for the RE, the grant component is only an ''add on'' to the regular scheme of the banks and valid only till the ''Grant Component'' is available to the bank.
- The RETs /EE suppliers rating through a Third Party (MME Solar Revolving Fund) are an additional cost and time consuming process. It delays the financing of RE & EE projects.
- The above RE schemes are more a ''portfolio enhancement'' and ''marketing strategy'' of the banks. On paper they look attractive but when the banks are approached for details, the requirements for approval are same as for any other bank-financing product.
- Hence the RE schemes launched by Banks in SMEs (Bank Windhoek and First National Bank) have not significantly benefited the SMEs /suppliers at large. Since most of the newly launched schemes have come up as a result of MME Solar Revolving Fund, which is a ''Regulation Driven Mechanism'', they are ineffective. Fostering RE & EE schemes in the

SMEs would need a ‘‘Market Mechanism’’ which can be driven through the ‘‘Market Pull’’, created by the commercial interest of the stakeholders involved, i.e. bankers and SMEs / suppliers.

(vii) Implementation barriers

56. In order stimulate market demand for energy audits in buildings to promote the use of more energy-efficient technologies; Namibia needs qualified auditors to identify the EE potential and measure cost-effectiveness in each building. Moreover to make the selection of better appropriate technologies possible, a list of internationally recognized and tested procedures for energy-efficient equipments and materials for the building sector have to be recommended and approved by the government. As a result of the barriers mentioned, the procurement and operationalization of energy-consuming technologies in the building sector are often overly focused on initial cost optimization, rather than life cycle analysis, to the detriment of the overall efficiency.

57. Higher efficiency products and building material are also not always domestically available. The reason is that local engineers, manufacturers, retailers and constructors lack expertise in the marketing of highly energy efficient technologies and in designing projects where they are used. Moreover the theft of equipment like Photo Voltaic panels could be a problem if equipments are installed outdoor and are easy to reach.

58. The NEEP project has been designed to mitigate some of the most significant barriers mentioned above, thereby allowing the market transformation process to be implemented at a faster rate. GEF experience in terms of promoting EE practices and technologies has shown that “the critical barriers to the implementation of energy efficiency projects within target markets should be identified, and customized interventions to address them sustainably should be determined in advance.” Each outcome in this project has thus been selected to address particular barriers.

STAKEHOLDER ANALYSIS

59. United Nations Development Programme’s (UNPD) previous experience shows that EE programmes are most effective when the process involves all stakeholders from the onset and when all analyses, interactions and decisions are open to full scrutiny by all parties. The GEF’s experience in the energy efficiency field points to the lesson that “Risks should be shared among all program participants.” The development and implementation of this project will be as transparent as possible, with the active involvement and joint risk-sharing of the government, industry (including equipment manufacturers), Non-Governmental Organizations (NGO), utilities, technical and professional bodies, etc.

60. The main stakeholders of this project are listed below and their detailed involvement in the project can be found in Annex A.

Government Ministries

- **Namibia’s Ministry of Mines and Energy (MME):**

61. The MME is the main stakeholder for this project. Its mission is to promote, facilitate and regulate the responsible development and sustainable utilization of Namibia’s mineral, geological and energy resources through competent staff, innovation, research, and to collaborate with stakeholders in a conducive environment for the benefit of all Namibians.

62. On the energy front, the MME’s objective is to ensure an adequate and affordable energy supply in a sustainable manner, taking advantage of natural resources in support of the Namibia's socio-economic development through:

  - Supply security: secure a sufficient and reliable supply of sustainable energy which supports the growing needs of the country and the Government's endeavour to develop new industry.

- Social uplift: redress inequalities in provision of energy supplies; all households shall have access to affordable and appropriate energy supplies.
- Economic competitiveness and efficiency: ensure that increases of energy supply and utilization are sustainable, competitive and economically efficient.
- Effective energy sector governance: Namibia will have energy sector governance which undertakes effective planning, is flexible in its approach, and has adequate staff resources.
- Investment and growth: Namibia will endeavour to achieve a high level of investor confidence in the energy sector resulting in fixed inward investment and economic benefits for the country.
- Sustainability: Namibia will move towards the sustainable use of natural resources for energy production and consumption in as economical and efficient manner as possible.

63. Other ministries could also be involved in the project:

- **The Ministry of Environment and Tourism (MET)**
- **The Ministry of Works and Transport (MWT)**
- **The Ministry of Regional and Local Government, Housing and Rural Development (MRLGHRD)**

Parastatal and non-governmental organizations

- **Desert Research Foundation of Namibia (DRFN):**

64. The DRFN is a Namibian non-governmental sustainability organization aiming to enhance decision making for sustainable development through research, training and consultancy in the country's land, water and energy sectors.

65. DRFN provides objective, relevant and professional services supporting decision makers from communities to traditional and local authorities, from the highest decision making bodies and individuals in government and private sector. This is achieved by developing, disseminating and implementing scientific, fact-based and analytical options that form the backbone of policy development, planning and implementation, thereby contributing to Namibia's sustainable development.

66. On the energy front, DRFN have a dedicated Energy Desk who believes that the greater use of RE sources, diversification into alternative energy sources, and greater efficiency in the use of power can all make Namibia's energy consumption more sustainable. The Energy Desk is involved in realizing some of these great opportunities.

- **Electricity Control Board (ECB):**

67. The ECB is a statutory regulatory authority established in terms of the Electricity Act, 2000 (Act 2 of 2000). The ECB has the core responsibility of regulating electricity generation, transmission, distribution, supply, import and export in Namibia. In the execution of its statutory regulatory functions, the ECB affairs are managed by a technical secretariat headed by a chief executive officer.

68. With a mission to control and regulate an efficient Namibian Electricity Supply Industry (ESI) in a transparent and fair manner for the benefit of all stakeholders, ECB's vision is to be a dynamic, efficient and environmentally sensitive regulator by:

- Providing effective leadership to the ESI.
- Being the architect of a sustainable, dynamic and efficient ESI.
- Achieving a competitive and transparent electricity market in Namibia.

- **Habitat Research and Development Centre (HRDC):**

69. The HRDC is the brainchild of the MRLGHRD. With a vision to be the centre of excellence in housing research and development, HRDC works towards applying new science and technology methods and ideas for the sustainable development of the Namibian housing sector.

70. Its mission is to promote the use of local indigenous building materials and designs, to engage multi-disciplinary teams in basic research, and to adapt existing knowledge and applied research to achieve a holistic approach to problem solving in the field of housing and related issues through performing the following activities:

- Provide a central information resource centre focusing on sustainable development.
- Promote sustainable and environmentally appropriate housing.
- Promote the liaison between different interests and stakeholder groups in order to create a sustainable housing network.
- Conduct and facilitate research in the housing sector.
- Enhance proper housing and settlement designs and layouts.
- Develop local skills in sustainable housing construction methods.
- Develop management skills within and among small contractor companies.
- Educate the public at large about sustainable housing methods and ideas.

71.HRDC has been included in the National Development Plan of Namibia as a research centre in the housing sector. A strategic alliance has been formed between the MRLGHRD, the National Housing Enterprise (NHE) and the City of Windhoek in terms of the construction and operation of the HRDC.

- **National Housing Enterprise (NHE):**

72.The NHE is a parastatal agency of the MRLGHRD which is part of Namibia's Government. NHE acts as a lending institution as well as a developer in the field of low income housing. It is accountable to the Board of Directors whose members are appointed by the MRLGHRD.

73.The NHE operates almost under the same economic conditions as private developers. It has a comparative advantage above its competitors, as it is the only housing development agency that can grant loans without land being proclaimed. This advantage enables NHE to extend its production frontiers to the untapped housing market in communal areas.

74.The main objective of the agency is to make housing possible and affordable to low income citizens. NHE provides financing for up to 100% of the house value at prime rate (currently at approximately 11.44%) minus one over 20 years.

75.The agency offers solar water heaters and other EE and RE products as options to its customers. It is up to the owner to decide between electric and solar powered water heaters in their residence.

- **Renewable Energy and Energy Efficiency Institute (REEEI):**

76.The REEEI is an institute of Namibia Polytechnic's dedicated commitment t serve as a national information resource base for RE and sustainable energy use and management. It was officially launched in October 2006 following the signing of a cooperation agreement between the Polytechnic and the MME. The main sponsor of REEEI is the Government of the Republic of Namibia via a grant through MME. The Institute serves as an information dissemination platform and plays a leadership role in the knowledge transition from traditional energy sources and usage to a more sustainable energy economy.

77.Working closely with the MME, the GEF-funded Namibia Renewable Energy Programme (NAMREP) is working to address various barriers to RE in Namibia. The REEEI is linking up various Polytechnic departments with different organizations for research and development in both RE and EE. The Institute has already engaged several stakeholders in the media (both printed and radio) and others by way of direct presentations and discussions.

Electricity Sector Bodies

- **NamPower:**

78.NamPower is Namibia's national power utility and is specializes in the generation and transmission of electricity. Its main objectives are the availability, affordability and accessibility of electricity to as many Namibians as possible within the shortest possible time frame.

79. NamPower's main sources of power are the thermal, coal-fired Van Eck Power Station outside Windhoek, the hydroelectric plant at the Ruacana Falls in the Kunene Region, and the standby diesel-driven Paratus Power Station at Walvis Bay. The utility also has a world-class transmission network.

80. As an electricity company, NamPower understands that electricity invariably plays an important role in the socio-economic development of Namibia and is dedicated to promoting effective EE measures.

- **The Regional Electricity Distributors (REDs):**

81. A RED is a regional electricity distributing company tasked with supplying electricity to the residents in a specific region. In 1998, the MME recommended that Namibia be divided into five areas and that a single electricity distributor be established for each area solely responsible for electricity distribution in that area. In order to consolidate all distributions in an area, all electricity distributors in such area voluntarily join their electricity businesses in a single private entity, a RED. The Namibian Cabinet has approved the establishment of REDs in Namibia since 2000.

82. REDs are established through private companies with all initial shareholding by Government-owned or public entities. They are concerned with electricity supply and creating conducive conditions for the achievement of Vision 2030.

Industry Representatives

- **Namibian Manufacturers Association (NMA):**

83. The NMA was established in 1994 by a small group of Windhoek manufacturers as the Association of Namibian Manufacturers with the objective to represent the manufacturers as a group in negotiations with the Government.

84. In 2002, it was transformed into an NGO which could also act as a legal entity serving as the watchdog and mouthpiece of Namibian members representing 61 manufacturers, and offering them and others services to help improve their businesses. In 2005 the Association developed a strategic plan with the vision to facilitate a sustainable, competitive and prosperous manufacturing and processing industry for all stakeholders' benefit.

Professional Associations

- **Namibia Institute of Architects (NIA):**

85. The NIA is a non-profit, statutory institution established in 1952, under the previous title of The Institute of South West Africa Architects. Its purpose is to promote architecture and sound architectural practice among the Namibian architectural profession and general public of Namibia, Southern Africa. Currently the NIA has a membership of 86 registered professional architects, and is a member of the African Union of Architects, The Commonwealth Association of Architects and the Union of Architects, thus ensuring an international representation. The NIA is also closely affiliated with the Namibian Council for Architects and Quantity Surveyors.

86. Services currently rendered by the NIA are to:

  - Provide relevant practice documentation, such as contracts.
  - Organize Continuing Professional Development (CPD) courses and other informative slide shows, lectures and exhibitions.
  - Assist with publications showcasing Namibian architects' work.
  - Compile and e-mail the NIA Newsletters.

Municipalities

- **City of Windhoek:**

87. The City of Windhoek's beyond the year 2000 Vision is to enhance the quality of life of its people and to render efficient and effective municipal services. The City upholds the following values; Winning Team, Innovation, Diversity and Equity, Honesty and Integrity, Open Communication, Efficient and Effective Knowledgeable". The City is committed to render efficient and effective municipal services.

BASELINE ANALYSIS

88. The baseline scenario in Namibia's building sector before the implementation of the NEEP project is characterized by the following aspects:

- National building codes do not incorporate any standards and recommendations on EE and RE with regards to any of the following aspects:
  - Building envelope (insulation, sealing, etc.).
  - Lighting (technologies, control systems, etc.).
  - Heating, Ventilation and Air Conditioning (HVAC) systems.
  - Water heating systems (solar water heating).
  - Indoor air quality.
- Potential energy-efficient technologies for buildings are not identified on the market. No recommendations have been made for the introduction of energy-efficient equipments and materials that have been internationally recognized and tested with proper procedures.
- Building owners have no access to specialized financial resources to introduce energy-efficient technologies in their buildings because financial institutions are not familiar with the cost savings from the applications and thus often present a reluctance to extend financing for the purchase of such assets.
- Building owners have no access to technical resources to conduct energy audits in their buildings and evaluate the potential cost-effective measures that could be implemented to realize significant energy savings.
- Few energy auditors in the country are highly qualified to undertake energy audits in buildings.
- No energy audits have been conducted in the Namibian building sector.
- Principle players (manufacturers, retailers, designers, architects, constructors, etc.) in the market are not promoting EE. According to an EE Baseline Survey, 17% of local architects surveyed were not aware of EE issues in buildings whilst 67% were aware but still not implementing EE measures in their practice.

2 STRATEGY

PROJECT RATIONALE AND POLICY CONFORMITY

89. Overall, the NEEP in Buildings project is set against a background of rising electricity consumption in Namibia coupled with a growing power deficit in South Africa, the country's main energy supplier. Like most developing countries who are energy importers, the likely increase in future energy costs or disruption in energy supply could jeopardize Namibia's economic growth. These developments and risks contrast with the limited application of energy-efficient measures and technologies in the country, particularly among local authorities (including the REDs) who are the largest single electricity consumers with the domestic/residential sector accounting for almost 50% of current energy consumption. Energy efficiency measures in buildings can be expected to not only limit demand (and thus save costs) and improve energy security, but also generate employment and serve as a cost-effective GHG emission reduction option. As part of the historical legacy between Namibia and South Africa, Namibia has inherited South Africa's energy-inefficient mind-set, technologies, applications and regulations as well as the general lack of awareness regarding the cost advantages of energy-efficient technologies and equipment.

90. The project is consistent with the Climate Change focal area Strategic Program 1: "Promoting Energy Efficiency in Residential and Commercial Buildings" by promoting energy efficiency in buildings. It will (a) help Namibia to develop energy performance standards for buildings by strengthening stakeholders; (b) support the adoption of an integrated building design approach through information, awareness-raising, and demonstration, and (c) promote energy efficiency in new and existing buildings. The project falls under the UNDP-led *GEF Global Framework for Promoting Low Carbon Buildings* with a primary focus on two thematic approaches promoted by the Framework: a) Promotion and increased uptake of high quality building codes and standards – by introducing and enforcing mandatory energy efficient building codes; and b) Developing and promoting energy efficient building technologies, building materials and construction practices – by piloting integrated building design.

91. Successful outcomes of this particular project include increased market penetration of energy-efficient technologies, practices, products, and materials in the residential and commercial building markets. Indicators of success include tones of CO_{2eq} emissions avoided, the adoption of EE standards, and the estimated quantity of energy saved. Among the expected direct impacts of the project is improved efficiency of energy use in the existing building sector resulting in lower specific energy consumption and CO_2 emissions per household and square meters of building surface. In addition to its direct effects, the project will develop capacities, policies and heighten consumer awareness that is expected to result in indirect effects attributed to structural changes in government energy policy, manufacturers' product policies, and consumer awareness and behavior.

COUNTRY OWNERSHIP

92. Climate change is considered one of the most serious threats to Namibia's environment, human health and well-being, as well as its economic development. Namibia ratified the United Nations Framework Convention on Climate Change (UNFCCC) in 1995[9] and the MET became the national focal point for climate change issues. The ratification has placed a number of legal obligations on the country. Among them is the preparation and presentation to the Convention of the Initial National Communication (INC) on the status of climate change as well as corrective actions to reduce the predicted effects of climate change on Namibia in particular, and the world in general.

93. Another action implemented under the national climate change program is the establishment of the Namibia Climate Change Committee (NCCC) in 2001. The NCCC is a multi-stakeholder committee to advise government on the needed policies and strategies to adopt for preparing the country to the predicted and, in some cases actual, effects of climate change. Currently the committee consists of

[9] Ministry of Environment and Tourism, Government of Namibia, www.met.gov.na.

representatives from the government, NGOs and parastatals such as NamWater and NamPower, private sector representatives and tertiary academic institutions such as the University of Namibia and the Polytechnic of Namibia. The MME has also taken other important steps to improve the performance of the energy sector through its White Paper on Energy Policy. In this policy, the Government of Namibia recognises the importance of RE and EE.

94. Since the Energy Paper of 1998 and complemented by Vision 2030' approach towards renewable energy, electricity supply has become a major issue for Namibia and indeed the entire SADC Region. The role that the Energy White Paper played in the development of the Namibian renewable energy technologies development cannot be over emphasised as the following extract (see box) underpins the Government`s commitment to changing the playing field for the implementation of adequate RE technologies and also NEEP in buildings.

Box 1: Government of Namibia Policy on RE[10]

Government will ensure that institutional and planning frameworks treat renewable energy on an equal footing with other forms of energy when assessing their financial, economic and social costs and benefits.

And,

Government will facilitate adequate financing schemes for renewable energy applications, and will encourage government agencies, investors and users to make decisions based on the life-cycle costs of alternative energy options.

95. In this context Namibia has quite a long history with renewable energy (RE), energy efficiency (EE), and technology transfer (TT) platforms. The Government of Namibia's social obligation to electrify rural areas and the need to provide electricity for the rural poor was a major initiative following independence in March 21, 1990. The rural poor population is dispersed over large parts of the country, making electricity grid extensions often not a viable option, hence leading to the development of off-grid platforms. These early assumptions drove government to implement several projects in support of the adoption of renewable RE, EE, and TT solutions. The need to bring rural communities into the mainstream economy saw the initiation of projects focusing on the development of different forms of energy, including from renewable sources. The emphasis by the Namibian government on exploiting renewable energy technologies, management of existing resources and coordination of donor activities on renewable projects is demonstrated per the exhibit below.

Exhibit 1: Exploitation of renewable energy technologies (RETs)

RENEWABLE ENERGY

NAMREP Phase I

Namibian Government through the Ministry of Mines and Energy (MME) is host to the UNDP/GEF/MME`s Barrier Removal to Namibian Renewable Energy Programme (NAMREP I & II), which has achieved significant success in RE technology diffusion. NAMREP Phase I is a 2.5 year project launched in 2004. The project was designed to remove the technical, financial, social, institutional capacity, public awareness and social acceptability barriers to solar energy use. The programme focused on solar photovoltaic technology (solar home systems) and solar water heating. NAMREP Phase I ended in mid-2007 and the second phase (NAMREP II) started mid - 2007 for another 3 years. NAMREP Phase 1 had six components with related milestones, namely;

• **Component 1: Capacity building** - the capacity building component focused amongst others on the

[10] Source: Energy White Paper of 1998

training of the Private Sector (PV industry), NGOs staff, the Government and the PMU to create technical capacity in dealing with renewable energy issues. At the end of Phase 1 NAMREP had trained about 140 RETs technicians, government officials and NGOs in the installation and maintenance of solar home systems. These trained technicians are spread throughout the country. With reference to the framework above, this is a positive contribution to the implementation of technology through strengthening the operation and maintenance network required to ensure the sustainable use and maintenance of solar energy applications. In addition, 30 of these technicians have set up small enterprises marketing solar products and services.

• **Component 2: Policy and Institutional barriers** - the primary objective of this component was to influence GRN policies so as to make them more favourable/equitable to RETs. This was to be achieved through removing barriers related to budgeting, subsidies, information and other institutional barriers. The results achieved as of the end of Phase 1 are a Cabinet Directive to install Solar Water Heating in all public buildings introduced as new policy as well as a Cabinet Directive on the implementation of Off-Grid Energy Master Plan for the rural areas. Further guidelines on standards and codes of practices were developed during Phase 1 of the NAMREP Project.

• **Component 3: Public awareness and social acceptability** - the objective here was to create awareness throughout Namibia of RETs and advantages of their use, addressing the particular needs of the stakeholders. The achievements under this component include: 200,000 people reached through dissemination campaigns featuring brochures and pamphlets (both translated into six local languages), the holding of stakeholder seminars and workshops, promotional items, adverts in local newspapers on RETs, and the launch of a NAMREP Quarterly Newsletter being circulated country-wide as a RETs marketing tool.

• **Component 4: Financial barriers** - the primary objective of this component was to reduce/overcome the financial barriers to the supply, installation, purchase and maintenance of RETs, including price reductions and the ready availability of finance for the purchase and maintenance of systems. The Bank of Windhoek scheme for personal loans on RETs and for small RE entrepreneurs was set up during NAMREP Phase I to complement a Solar Revolving Fund funded by MME and administered by Konga Investments (Pty) Ltd. The combined semi and commercial financing institutions issued a total of 741 loans to RETs end users as at end of NAMREP's Phase 1.

• **Component 5: Technical barrier** - the main objective of the reduction of technological barriers was to facilitate, support and strengthen institutions such as the Renewable Energy and Energy Efficiency Institute (REEEI) in Namibia, which will generate detailed technical information and develop and apply appropriate norms, standards and codes of practice as required by the RET industry and their market. REEEI is now capacitated and fulfilling its mandate.

• **Component 6: Demonstration and pilots** – the objectives of the demonstration component of this Project were twofold: to test the market for RETs and refine project activities to successfully complete the market transformations of their appropriate applications throughout Namibia. A total of 17 RETs demonstrative sites were implemented in Namibia since the start of the NAMREP Project with capacities ranging from 75Wp to 25,200Wp. This component draws together the barrier removal activities and tests, and refines strategies to remove/reduce barriers in the RETs market, including information, materials and financial modalities, as well as building awareness of solar energy services in institutions and individuals. The achievements of these results by the programme were based on sound research commissioned by the programme.

NAMREP Phase II

The development objective of NAMREP II is to promote the delivery of commercially, institutionally and technically sustainable energy services in the solar energy sector, including solar electricity production (for off-grid lighting, radio, TV, water pumping, and refrigeration) and solar water heating to household, institutional, commercial, and agricultural sectors. This project has five components, namely:

Component 1: Capacity Building: the capacity building component focuses amongst others on the training of Private Sector actors (PV industry), NGO staff, and Government actors dealing with renewable

energy issues.

Component 2: Policies, Laws & Regulations: the primary objective of this component is to ensure that new policies, laws and regulations and actions in support of Renewable Energy Technologies (RETs) are in place.

Component 3: Public Awareness: the overriding objective is to increase RET public awareness and social acceptability amongst stakeholders.

Component 4: Financing & Product Delivery: the objective of this component is to ensure that appropriate financing and product delivery schemes are set up and expanded.

Component 5: Learning, Evaluation & Adaptive Management: the objective of this component is to monitor and evaluate progress as well as document and disseminate lessons learned.

The GTZ Funded PV Project

In 1994 the Ministry of Mines and Energy (MME) in collaboration with the Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) launched the Home Power Programme aimed at providing Solar Home Systems (SHS) to rural communities in Namibia. Approximately 600 SHSs have been sold through the programme. The particular delivery model is based on system ownership by the user. In 2000, the Indian Government donated 140 SHSs to the Namibian Government. These were installed in two villages under the Solar Electrification of Lianshulu and Spitzkoppe (SELS) project. These two solar power systems have remained the property of the MME and are utilised free-of-charge by the users.

DANIDA Funded PV Project

The Danish International Development Agency (DANIDA) through the project Renewable Energy and Energy Efficiency Capacity Building in Namibia (REEECAP) has provided support to the Renewable Energy sector to the amount of US$ 2.12 million that has complimented the above-mentioned UNDP/GEFMME NAMREP project since 2005. This project was tasked to address the following barriers:

- Capacity building
- Efficient Use of Energy in Low Cost Housing, planned, implemented, and used (a demonstration project)
- REEECAP, Capacity building initiative designed to put REEE issues on the agenda of Rural Development activities.

DEGREEE Funded Project

The Demonstration Gobabeb of Renewable Energy and Energy Efficiency (DEGREEE) programme situated in the Namibian desert at Gobabeb Training and Research Centre (GTRC) has been developed over a 5 year period from 1998 to 2002. Funded by the Danish Government through Danida, the DEGREEE project addressed the energy situation at Gobabeb. The wider objective with the DEGREEE project is to demonstrate energy technology, energy efficiency and energy management with the purpose of inspiring others to apply these applications and by that initiative contribute to the supply of energy to remote, isolated locations in Namibia and the SADC Region. The DEGREE project combines the four elements of sustainable energy.

The DEGREE project brought a Hybrid Energy system to Gobabeb. This system allowed Gobabeb to switch over from an 18 hour diesel power generation to a system of 24 hour power made up of a combination of solar, wind, and diesel generation. This system allowed the Gobabeb Training and Research Centre to cut back its diesel usage by 83 percent, and serves as an example to Namibia and all of SADC on how RE sources can be used to achieve a sustainable system of low-cost, low-environmental

impact electricity generation with reduced GHG emissions.

Tsumkwe Energy Project

NAMREP commissioned a small team of experts in mid 2005 to evaluate the energy situation at Tsumkwe, which had to assess whether a Hybrid Mini-grid Energy Supply System (as demonstrated by a DEGREE project) would be a feasible long-term electrification solution for Tsumkwe. The Tsumkwe project also incorporated the assessment of the Gam project which is located about 100 km from Tsumkwe and is an off-grid settlement.

NAD 26 million mini-grid energy supply system funded by the European Commission (EU) (NAD 20 million), NamPower (NAD 3 million) and Otjozondjupa Regional Council (NAD 3 million) is being installed at Tsumkwe as a long term electrification approach and until such time the village can be connected to the national electricity grid. Presently, a small medium voltage grid network connects Tsumkwe`s electricity consumers with diesel installation and hence the system at Tsumkwe will strongly benefit if the generator sets are run at a better capacity factor through the ongoing initiatives led by EU as the major funding source. The project schedule / timeline is as follow:

- Energy Efficiency roll-out: February to May 2011
- Hybrid system and grid upgrade /repair: June 2011

Spanish Solar Schools Project

The First Phase Spanish Solar Schools Project is a collaboration of the MME, Ministry of Education, UNESCO Windhoek Cluster Office, UNDP Namibia, SchoolNet and DRFN. The project objective is to solar-electrify primary and combined schools and affiliated community centers in the country to provide cleaner and efficient energy services. The total numbers of institutions provided with energy services during 2006 to 2007 at a cost of NAD 900,000 are ten (10) institutions. All of these institutions are located in rural areas.

With regard to the Second Phase of the project at the cost of NAD 1,5 Million and which is also to solar-electrify additional primary and combined schools in the northern part of Namibia, the second phase could unfortunately not take off or implemented due regard that the implementing agent – SchoolNet – has since been dissolved. For this reason, the funds went back to the Spanish government hence a need to encourage future engagement from potential donors to revive this project.

ENERGY EFFICIENCY (EE) PROJECTS

The key to any successful national strategy for EE is to have a strong institutional and policy framework. This means that there is both a strong policy-led government commitment to EE plus the institutional framework to make it successful. The following are institutions and agencies contributing to the promotion of EE programs in the country.

Renewable Energy and Energy Efficiency Institute (REEEI)

The Polytechnic of Namibia and the Ministry of Mines and Energy (MME) signed an agreement to establish a centre of excellence, which can undertake research on RE resources and EE in the country. The REEEI was launched in October 2006 at the Polytechnic. The REEEI's main objectives are to provide research and development interventions in the following areas of RE and EE.

#	Renewable Energy Areas	Energy Efficiency and Conservation Areas
1.	Solar energy	Energy efficient light bulbs
2.	Solar technology	Solar cookers
3.	Wind energy	Solar heaters
4.	Wave energy	Building materials

5.	Wave energy technology	Passive design
6.	Biomass energy	Industry and transport
7.	Biomass energy technology	
8.	Waste energy	
9.	Waste energy technology	
10.	Bio diesel	
11.	Bio ethanol	

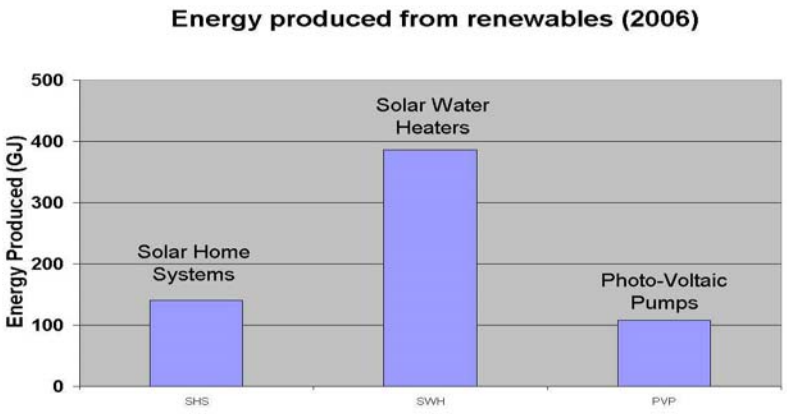
Renewable Energy and Energy Efficiency Capacity Building Project (REEECAP)

The Ministry of Mines and Energy co-financed together with the Polytechnic of Namibia of the REEEI and Danish International Development Agency (DANIDA) this project back in 2007. Major activities for EE commissioned by the REEECAP Programme include;

- EE baseline surveys for rural, peri-urban and urban households
- EE Strategic Action Plan
- EE in buildings
- RE baseline survey
- REEECAP REEEFocus
- Community development and training for RE and EE
- Biomass energy: workshop on wheels
- Energy-related impacts of climate change on rural households
- Energy efficiency in Namibian schools

Barrier Removal to Namibian Renewable Energy Programme (NAMREP)

Integrating EE and RE has grown in importance in recent years and MME has explored the implications of stronger RE and EE integration for the country. Featuring demonstrations and a pilot component, the MME, UNDP and GEF funded NAMREP I & II programmes which implemented over 20 demonstration and pilot projects throughout the country in the form of solar water heaters, solar home systems and photovoltaic. The figure below demonstrates energy produced from renewable variables in the country.



Electricity Control Board (ECB)

In its short-term plans to solve the power shortage problem in the country, the ECB promotes demand-

side management and identified the five following options:

- Consumer's education awareness campaign and demand market participation
- Time of use
- Replacing electricity water heaters with solar water heaters, e.g. the University of Namibia as well as the Polytechnic of Namibia have replaced their boilers with solar water heaters.
- Ripple control measures
- Energy audit in the commercial and industrial sector

Desert Research Foundation of Namibia (DRFN)

The DRFN mission is the empowerment of decision makers at all levels through capacity building, facilitation, knowledge generation and sharing in order to promote sustainable development that includes RE and EE. Through its energy desk, the DRFN focuses on sustainable renewable energy practices in Namibia and spearheaded the case study Programme for Biomass Energy Conservation in Southern Africa in which young school dropouts in Namibia are now making a living from producing and selling improved EE stoves.

Habitat Research and Development Centre of Namibia (HRDC)

The HRDC's factors contributing to energy efficiency in the country involve:

- Researching local housing conditions, training needs, sanitation, energy, building materials and efficiency construction techniques.
- Educating the public at large on sustainable housing issues with emphasis on energy efficiency.

DEGREEE Project

The DEGREEE project uses EE technology including RE and brought about a hybrid energy system with a combination of solar, wind and diesel generation in the country. This system helped reduce the project implementer's diesel usage by 83 percent, and serves as an example to Namibia and all Southern African Development Community (SADC) of how renewable energy sources can be used to achieve a sustainable system of low cost, low environmental impact and efficient electrical generation.

TECHNOLOGY TRANSFER (TT)

Concentrated Solar Power Project (CSP)

Namibia recently prepared a full sized project concept for the transfer and deployment of Concentrated Solar Power (CSP) technology for power generation to feed into the grid to increase the proportion of renewable energy in the Namibian energy mix, and enable Namibia to take advantage of the country's exceptional solar radiation and the availability of suitable land areas. The pilot project will develop technology partnerships to enable Namibia's participation in international research and demonstration of CSP technology, identify local capacity needs to support CSP technology development and transfer, and identify the legal, fiscal and regulatory framework required to promote diffusion of CSP technology, as well as define the investment climate required to leverage private investment in CSP. In addition, the project promoter will use lessons learned from the pilot phase of the DEGREEE Funded Project and formulate a CSP framework program aiming to set up a commercially-operated CSP plants in the country supplying power to the national grid to improve energy access for rural populations.

Long Wave Radio Technology for Electrical Load Control & Time of Use (TOU) /Remote/Smart Metering

As part of the ECB`s Demand Side Management Program that reinforces ongoing initiatives in energy efficiency and clean technologies promotions through the REDs in the country, the full sized project is aimed to expand electrical load control measures through a "Long Wave Radio Technology Transmitter". A LONG WAVE RADIO transmitter system will be built for Namibia proposed in Otjiwarongo and covering the majority of Namibia`s load centres through a 500km radius with no line-of-sight requirement. Most Namibian households are connected to the electricity grid electric water heaters for the supply of hot water. Such heaters can easily be switched on and off remotely using Long Wave Radio Signals, and such switching can be undertaken without inconveniencing consumers. Conventional ripple control technology (control signals superimposed upon the electrical supply waves) has been in operation in Windhoek and Walvis Bay only, and is saving these utilities a significant amount of money. Such savings are realized because the system electrical load and demand can be reduced when required, thereby allowing the utilities to influence the shape of their respective load curves by deferring electric consumption from peak to off-peak demand period. It is the ECB`s strategic direction that ripple controls of electric water heaters be expanded into most larger Namibia towns through the more efficient Long Wave Radio Technology System; maximum demand, target demand setting, time of day control, manual load control, street lighting control and paging. When implemented, the Long Wave Radio Technology Transmitter is expected to lead to a total demand reduction of approximately 50MW, equating to approximately US$ 500,000 per MW (the capital cost of new hydro, gas and coal power stations are US$ 2million, US$1,5 million, and US$ 3 million per MW). The project brings together a number of best-practices and tools designed to improve the management capacity and facilitate effective integrated decision-making in the field of energy management. It does so by focusing greater attention on how to audit, monitor and optimize the consumptions in order not only to reduce the costs, but also to mitigate the environmental impacts through suppression and /or reduction of wastes, leakages, abnormal consumption, inadequate installations, inappropriate utilization of equipments, and inappropriate equipments, This Technology Transfer program is intended to enable Namibia to strive to make decisions that integrate technical management and sound management of energy efficiency in a manner that is consistent with best proven practices implemented in developed countries. Estimated at a total cost of US$ 25 Million, the technology is in operation since 1993 and there are 3 Antennas in Europe.

Design Principles and Strategic considerations

96. The project was designed with extensive inputs from the major line ministries involved with the Namibian White Paper on Energy Policy and its Strategic Action Plan on RE. It fits within the government's overall plan to encourage EE measures in the building sector by integrating EE standards and recommendations in the national policy and building codes. The project would address key issues in the government's strategy, such as increasing institutional capacity for EE promotion and development.

97. The NEEP project is consistent with, and supportive of, national development priorities as well as internationally agreed programmes of action for sustainable development. It is also relevant to the UNDP mandate through its strong emphasis on capacity development and technical training for the public and private sectors in order to provide local officials, as well as professionals, with the necessary know-how and technical skills to fully participate in the market transformation process for EE in buildings and provide other decision makers with information on energy-efficient technologies and best practices to integrate them in their operations.

98. The project is consistent with the Climate Change focal area Strategic Program 1: "Promoting Energy Efficiency in Residential and Commercial Buildings" by promoting energy efficiency in buildings. The project falls under the UNDP-led GEF Global Framework for Promoting Low Carbon Buildings with a primary focus on two thematic approaches promoted by the Framework: a) Promotion and increased uptake of high quality building codes and standards – by introducing and enforcing mandatory energy efficient building codes; and b) Developing and promoting energy efficient building technologies, building materials and construction practices – by piloting integrated building design.

PROJECT OBJECTIVE, OUTCOMES AND OUTPUTS/ACTIVITIES

Project Objective

99. The entirety of buildings in Namibia each year releases a significant amount of GHG in the air. GHG emissions are the most significant cause of climate change which means that saving energy in Namibian commercial and residential buildings is one of the most important and cost-efficient things that can be done to fight climate change. The project's objective is therefore the reduction of Namibia's energy-related GHG emissions through the nationwide adoption of energy-efficient technologies and practices in the commercial and residential buildings such as government office buildings, hospitals, hotels, schools and possibly a sample of residential buildings.

100. This would be achieved through a series of key activities:

- Firstly, the development of improved regulations (standards and labelling of building appliances) and adoption of building codes for energy savings. This would lead to an improved policy framework for EE in buildings, including an updated list of recommended appliances and materials to be used in the building sector subject to tax and duty reductions.
- Secondly, the provision of auditing and energy marketing services would stimulate the demand and supply of EE services and technology, particularly through the introduction of mandatory audits in public and commercial buildings.
- Thirdly, the strengthening of institutional capacity and awareness on EE in buildings that would further contribute to the adoption of EE technologies and best practices.

101. The following are the main expected outputs:

- Output 1.1: Policy and regulatory framework for EE in buildings improved, including building codes.
- Output 1.2: A list of EE appliances and materials for the building sector recommended for taxes and excise duty reduction.
- Output 1.3: EE projects developed and implemented in institutional, commercial and residential buildings (as demonstration projects).
- Output 2.1: Demand and supply for energy saving services and technology stimulated.
- Output 2.2: Mandatory audits in public and commercial buildings adopted.
- Output 3.1: Institutional capacity, awareness and information on EE in buildings increased.
- Output 4.1: Monitoring, feedback adaptive learning and evaluation ensured.

102. The proposed GEF-supported project includes four outcomes (or components) that are designed to overcome the barriers for the implementation of the NEEP in Buildings:

Component 1: Improved regulations and building codes for energy saving in developed buildings

Component 2: Organized provision of auditing and energy marketing services

Component 3: Increased institutional capacity and awareness

Component 4: Structured monitoring, feedback and evaluation

103. All of these components are, to a large extent, interdependent; hence all have to be implemented to remove the totality of barriers identified in the Namibian market. Each of the expected outputs includes a number of specific activities planned to achieve them. The following sections describe the numerous activities that are expected to be undertaken in each component.

Component 1: ***Improved regulations and building codes for energy saving in developed buildings***

104. The implementation of the NEEP project has to be conducted on solid foundations. In order to do so, one of the main objectives is to set and formulate appropriate regulations, standards and building codes to guide the EE activities development in the building sector. This component will provide valuable outputs that will justify the integration of EE technologies and practices for buildings in Namibia's regulatory framework with the aim of securing political support and financial assistance in the longer term. Another objective of this component is to demonstrate through pilot projects in a few selected buildings the effectiveness and other advantages of energy-efficient technologies for buildings.

Output 1.1: *An improved policy and regulatory framework for EE in buildings, including building codes*

- Formulation of a Strategic Action Plan on EE by MME (in co-operation with REEEI) in new and old buildings.
- Identification, revision and development of building codes

Output 1.2: *A list of EE appliances and materials for the building sector recommended for taxes and excise duty reduction*

- Detailed study on potential EE technologies and socio-economic survey
- Policy instruments, standards and financial incentives designed for a list of EE appliances and materials
- Compliance enforcement capabilities reinforced

Output 1.3: *EE projects developed and implemented in institutional, commercial and residential buildings (as demonstration projects)*

- Demonstration of EE benefits for buildings through pilot projects (including a Zero Emission Building at Erongo RED`s local workshop for urban and rural technical customer service centre; Uis, Omaruru, Karibib, Usakos, Otjimbingwe, Omatjete, Okombahe, Tubusis).

Component 2: ***Organized provision of auditing and energy marketing services***

105. The goal of this component is to set up adequate local capacity and stimulate the market for undertaking energy services in buildings. To accelerate market transformation and to raise the profile of energy-efficient technologies, the second objective is to launch the project with a number of mandatory energy audits and feasibility analyses, leading to the implementation of EE measures in the hope of influencing others in the building sector to do the same.

Output 2.1: Stimulation of demand for energy saving services and technology through the subsidization of enhanced capacity to undertake energy audits in buildings

- Program of certification of auditors

Output 2.2: *Mandatory audits in public and commercial buildings adopted*

- Selected energy audits and feasibility analyses
- Implementation of EE measures in at least 20 buildings (focus on existing buildings)

Component 3: ***Increased institutional capacity and awareness***

106. Public knowledge, awareness and perceptions are important elements in the successful penetration of the NEEP project. The objective of this component is to raise basic knowledge about energy-efficient technologies and practices throughout Namibia's building sector, addressing in particular the lack of information on EE in buildings and stimulating market transformation. For the Government of

Namibia and the Namibian REEEI, the primary objective is to provide adequate and relevant information on EE measures and best practices for buildings through various information mediums.

Output 3.1: *Increased institutional capacity and awareness and information on EE in buildings*

- Increased public awareness of national and local policy makers and of commercial developers
- Database and website set up at the Namibian REEEI
- Establishment of a green building rating system

Component 4: *Structured monitoring, feedback and evaluation*

107. This component includes the development and implementation of a monitoring, feedback and evaluation plan for NEEP project. This will include doing a mid-term and end-term project baseline study to review the data and issues, and to quantify the performance and impact indicators as well as defining a methodology to evaluate and measure the impacts of the EE measures implemented in buildings. Another objective of this component is to improve the understanding about the practicalities of energy-efficient materials and equipments for buildings, followed by dissemination of experiences and lessons learned.

Output 4.1: *Monitoring, feedback adaptive learning and evaluation ensured*

- Monitoring of indicators through baseline mid-term and end-term project analysis
- Monitoring and evaluation of project performance
- Dissemination of project results.

KEY INDICATORS, RISKS AND ASSUMPTIONS

Indicators

108. The most direct impact of the project as it relates to core GEF objectives is the reduction in CO_2 emissions by the power sector. Associated impacts such as (i) increased EE in Namibia's building sector and, (ii) a transformed local market for energy-efficient technologies and practices will contribute to the overall sustainability of the project and are thus critical to the continued reduction in nationwide CO_2 emissions.

109. A strong baseline, along with measurable indicators, will need to be established in order to properly monitor the impact of the project. This will need to be done before energy-efficient technologies and practices are adopted and implemented in commercial and residential buildings. The impact monitoring should be conducted on an annual basis by an independent evaluation firm, and the results will be used by the executive agency to improve and/or revise the proposed programme for commercial and residential buildings.

110. The following indicators could be used to measure the impact of the proposed initiatives:

Impact to be Monitored	Indicators	Verification Means
Growth in the number of energy audits undertaken in commercial and residential buildings.	Participation level in project activities.	• Project database • Energy Audit Reports • Survey of Namibia's Central Bureau of Statistics
Increase in market penetration of energy-efficient technologies, practices, products and material in the commercial and residential markets.	Sales of energy-efficient products and material, and implementation of energy-efficient technologies and practices.	• Project database • Survey of Namibia's Central Bureau of Statistics • Supplier and manufacturer sales data
Reduction in total energy usage in the commercial and residential building sectors.	Estimation of the total energy saved in the commercial and residential building sectors via measurement of energy consumption before and after EE applications.	• Project Monitoring and Evaluation reports • Survey of power utilities
Lower specific CO_2 emissions per building.	Tons of CO_2 avoided based on energy consumption reduction.	• Survey of power utilities • Project Monitoring and Evaluation reports

Risks and Assumptions

111. There are a number of risks associated with this project that might prevent the project objectives from being achieved. These risks were assessed during the project preparation phase and appropriate activities and measures were taken to mitigate them.

Risk	Risk Rating	Risk Mitigation Measure
Lack of political commitment	M	The government's willingness to promote EE in building is a key factor in project success. An important component of this project targets the improvement of building codes, regulations and policies which should all include EE specific clauses. The government must be willing to promote and support the legal introduction of these new standards, pushing for their approval. The MME and the Namibian REEEI will provide their expertise on EE in building and will support the government during the approval process.
Low technical capacity	M	Successful implementation of this project requires an increase in the industry's technical capacity (manufacturers, distributors, auditors, constructors, etc.). The project will seek to mitigate this risk by providing a series of capacity building activities that will help remove technical barriers to the implementation of energy-efficient technologies and practices in Namibia's building sector. Sufficient capacity support to the MME and the Namibian REEEI will develop the necessary in-house technical skills and will provide specific training to local auditors and other professionals from the industry to stimulate the provision of energy savings services and technology transfer in the commercial and residential building sectors. The MME and the Namibian REEEI will ensure that the local auditors will have the necessary technical capacity and have followed the program of certification before conducting energy audits in the commercial and residential building sectors.

Risk	Risk Rating	Risk Mitigation Measure
Lack of awareness of building owners and users to project activities	M	Building owners, like most consumers, are often not aware of energy-efficient products and technologies that could be implemented in their buildings. This is one of the reasons they avoid paying for energy audits; not realizing that the investment can be repaid through implementation of the measures identified. In addition, building owners often avoid purchasing energy-efficient equipments owing to their higher initial costs. While the project cannot mitigate the required upfront costs building owners' will incur for energy-efficient technologies, it will help provide information to potential users to make an informed choice and be aware of the cost-benefit advantages in the medium-term. With these activities in place building owners of the public and private sector should be willing to participate in the project and agree to implement EE measures in their building.
Reluctance on the part of industry and end users to participate in the programme and respond to project incentives	S	The implementation of an EE programme in buildings, including new regulations and building codes, can result in higher short-term investments and associated costs for the industry (product manufacturers, engineers, financial institutions, auditors, designers, etc.). There is also the issue of the typical split incentive between the building owner/construction firm and the end user if they are not the same entity (such as the case with rentals). The MME and the Namibian REEEI will make sure that pertinent incentives and technical support is provided to the industry during the implementation of the project. Furthermore, the industry must be continuously consulted during the development of the new regulations and building codes to establish their applicability in the context of the country's current circumstances and to make sure adequate planning can be done by businesses to insure adherence to the new regulations. With regards to the issue of the split incentive between the building owner/construction firm and the end user, this will be mitigated by focusing on buildings where the building owner and user are the same entity.
Climate variability may impose new priorities on the funding of Namibian Government and other partners.	M	Namibia's National Communications to the UNFCCC indicates significant vulnerability to climate change impacts. With an economy strongly dependent on natural resources such as agriculture, water, fisheries and wildlife and nature-based tourism, predicted impacts can have severe repercussions for the economic development and sustainable livelihoods. Under current climate, Namibia is already subject to frequent and persistent dry periods, as well as erratic rainfall, and Namibia is considered naturally the most arid country in sub-Saharan Africa. It is recommended that key project participants actively collaborate to share impending funding changes brought about by environmental variability.
Changes in political priorities	M	The Namibian Government is in close and continuous contact with the key project participants, which should allow project participants to assess the likelihood and impact of any potential policy changes which might affect the project prior to when they may materialize.

Risk	Risk Rating	Risk Mitigation Measure
Impact of the introduction of new electricity generation capacity in Namibia, decisions by South Africa (ESKOM) and/or associated reprioritisation of national DSM and EE programs	S	New electricity generation capacity may substantially influence future electricity prices in Namibia, possibly even lowering them in certain scenarios and thus being counter-productive to responding to the incentive for EE measures. However in line with the ECB's decision to continue to raise electricity generation prices above inflation to reach cost-reflectivity by 2011-12 in accordance with a Namibian Cabinet decision of 2005, it can be expected that even with new capacity coming online tariffs will remain the same or higher. The situation with ESKOM is more uncertain vis-à-vis its potential impact on the project but will be closely monitored and appropriate responses will be developed.
Inflationary pressures have had a considerable impact on the growth of Namibian economy in the past.	M	Although the medium-term outlook is more optimistic, inflation may impact the project delivery by reducing consumption and thereby reducing the incentives to seek investments for new plant and equipment, including energy-efficient technologies. It is recommended that the project design makes specific reference on how to mitigate possible inflationary impacts on project execution.
An economic down-turn will reduce the demand for energy and therefore will limit the investments in new buildings and EE measures.	M	It is recommended that the project design makes specific reference to scenarios that limit the impact of a down-turn in the project economy.
Overall Risk Rating	**M**	

Note: M: moderate; S: substantial; H: high.

FINANCIAL MODALITY

	Project Preparation	Project	Agency Fee	Total (USD)
Source of Financing				
GEF	50,000	859,000	90,900	999,900
Source of Co-financing (cash and in-kind)				
MME	40,000	3,094,000		3,134,000
Polytechnic of Namibia	20,000	1,130,000		1,150,000
Erongo RED	-	800,000		800,000
Osona West Party		129,000		129,000
Arandis Town Council	-	100,000		100,000
Total Financing (USD)	**110,000**	**6,122,000**	**90,900**	**6,312,900**

COST-EFFECTIVENESS

112. GEF resources are being sought to meet the cost of introducing the NEEP project that will intervene to include EE standards and recommendations in building codes and set up capacities to incorporate energy-efficient practices and technologies in Namibia's building sector. A strong emphasis on developing technical capacities of public institutions (government ministries, energy agencies, enforcement institutions) and private sector professionals (auditors, engineers, architects, etc.), and creating EE awareness among decisions makers and consumers will help invigorate a nascent market for EE in buildings. This will constitute a meaningful alternative to the business-as-usual baseline of Namibia's building sector, whose energy efficiency is currently lower than many other countries. Indeed, Namibia has adopted most of South Africa's energy-inefficient practices, technologies, applications and regulations, as well as suffering from a general lack of awareness regarding the cost advantages of energy-efficient technologies and equipment.

113. At the local level, the proposed investment will directly contribute to reduced electricity imports of about 1,828 MWh per year, representing estimated emission reductions of 1,956 tCO_2 per year. Those amounts only represent the annual direct impacts of the project resulting from the investment in pilot projects (including a zero emission building) and EE measures implemented in buildings, which will grow in equal steps each year over the 3-year project period between 2010 and 2013 for a total of 5,484 MWh. Factoring in the 25-year lifetime of new energy-efficient buildings resulting from pilot projects and the 15-year lifetime of EE investments in existing buildings, project investments will contribute to an emission reduction of 133,857 tCO_2. More savings will be achieved from investments proposed in energy audits undertaken during the project period but only realized thereafter (post-project impacts).

114. Moreover, the increased capacities, improved policies and consumer awareness that are expected to result after the programme implementation will have indirect impacts on the consumers' consumption patterns due to the structural changes of government's energy policy, manufacturers' product policies and consumers' practices. The programme will help improve the competitiveness on the market for energy services and energy-efficient technologies which will bridge the knowledge gap to ensure sustainability and replicability. Based on those market transformation effects, the indirect impacts by the end of 2022 are estimated to promote cost savings via an additional 54,000 MWh.

115. The energy saving calculation is based on two different activities. Firstly, they are based on the premise that 20 pilot projects have been implemented in new buildings (an average size of 1,500 m^2 each) in Namibia's institutional, commercial and residential sectors which include one zero emission building. To be conservative, we assume a 50% energy saving achieved for regular pilot projects, which represents annual savings of 206 MWh[11] in each building, and a 90% energy saving achieved for the zero emission

[11] The average annual energy consumption for a new standard building is 275 kWh/m^2 per year (source: the Namibian REEEI, www.reeei.org.na).

building, which represents annual savings of 370 MWh. Secondly, the hypothesis that EE measures have been implemented in 20 of Windhoek's existing commercial buildings of an average size of 1,500 m^2 each. To be conservative, we assume a 10% energy saving is achieved in each building, which represents annual savings of 60 MWh[12] for each building.

116. The global emissions reductions are calculated based on the assumption that all the savings achieved within the NEEP project will displace imports from South Africa. The indirect emission factor of South Africa is approximately 1.07 tonnes of CO_2 per MWh[13] (for reduced purchases of electricity based on average emissions intensity of fossil-fired generation); this calculation considers the fact that more than 90% of South Africa's electricity is generated from coal-fired power stations.

	Lifetime period (years)	Standard Annual Electricity Consumption (MWh/ year)	Percentage of Conservative Energy Savings (%)	Average Annual Energy Savings (kWh/year)	Number of Buildings	Total Annual Energy Savings (MWh/year)
Pilot Projects						
Energy-Efficient new building	25	412	50	206	19	3,914
Zero emission building	25	412	90	370	1	370
Projects in existing buildings						
Energy-efficient existing building	15	600	10	60	20	1,200

Direct Impacts in Namibia

117. The direct impacts include the energy savings and associated GHG emissions savings resulting from the 20 pilot projects (assuming the 25-year lifetime of the new buildings) and the 20 projects in existing buildings (assuming the 15-year lifetime of investments) implemented during the 3-year programme period.

118. In the case of the 20 projects to be conducted in existing buildings, direct project impacts will result from the investments in EE measures in existing buildings realized during the 3-year programme period and post-project impacts will result from the investments proposed in energy audits undertaken during the programme period but realized after the end of the programme (assuming a factor of 2 for 1).

Summary of Direct Impacts	Energy Savings Potential (MWh)	Emission Reduction (tCO_2)
Direct pilot projects impacts 2010-2037 period	107,100	114,597
Direct project impacts 2010-2027 period	18,000	19,260
Direct post-project impacts 2013-2027 period	36,000	38,520

Indirect Impacts in Namibia

119. The indirect impacts include the energy savings and associated GHG emissions savings achieved as a result of the ripple effect caused by the projects intervention (capacity building, information

[12] The average annual energy consumption for a standard existing commercial building is 400 kWh/m^2 per year (source: the Namibian REEEI, www.reeei.org.na).

[13] Foreign Electricity Emission Factor for South Africa (1999-2002), Energy Information Administration, Department of Energy, Government of United States, www.eia.doe.gov.

dissemination) in the EE investment market of Namibia's buildings within a period of 10 years after the project completion. We assume a replication factor for indirect impacts of 3 only based on the direct project impacts of EE measures in existing buildings.

Summary of Indirect Impacts	Energy Savings Potential (MWh)	Emission Reduction (tCO_2)
Indirect impacts 2013-2022 period	54,000	57,780

120. Overall, the market transformation towards energy-efficient products and material for buildings through the introduction of regulatory and policy framework (including minimum energy performance standards and recommendations in building codes) will contribute to a considerable reduction of electricity and GHG emissions. Considering all direct and indirect pilot project and project effects, GHG emissions could be reduced by more than 230 thousand tons of CO_2-equivalent by the end of 2037. It will also contribute to the process of sustainable development by offering several socio-economic benefits to the country in the form of the development of indigenous industry, local capacity building and employment generation.

NEEP in Buildings Impacts	Energy Savings Potential (MWh)	Emission reduction (tCO_2)
Direct Pilot Projects Impacts 2010-2037	107,100	114,597
Direct Project Impacts 2010-2027 period	18,000	19,260
Direct Post-Project Impacts 2013-2027 period	36,000	38,520
Indirect impacts 2013-2022 period	54,000	57,780
Total	**215,100**	**230,157**

121. The project directly contributes to the goals of Namibia's White Paper on Energy Policy, which proposes certain measures in order to reduce the burden of increased electricity need while Namibia's main supplier is facing a power deficit. The Government of Namibia has attached a high importance to a project that could have a great impact on Namibia's energy security and economy.

SUSTAINABILITY

122. The establishment of an effective EE programme in buildings promotes energy-efficient technologies and practices leading to a more sustainable energy future. First off, energy-efficient technologies and practices are introduced through a formalized process requiring an improved government regulatory and policy framework for EE in buildings including adapted building codes with EE standards and recommendations. Once established with a clear government backing, the NEEP in buildings effectively transforms the market to a higher level of energy saving services including energy audits, feasibility analysis and EE measures implementations in commercial and residential buildings with a gradual enhancement of energy-efficiency technologies and practices over time to take into account new technological developments and the country's capacity to pay for those technologies.

123. Since the proposed GEF project comprises a strong capacity building element, the main outputs of this project will not only be new energy-efficient technologies and practices, but also enhanced

institutional capacity to effectively maintain energy saving services and revise the regulatory and policy framework over time. The project will specifically focus on addressing issues related to awareness barriers by increasing institutional capacity and awareness as well as providing information on EE in buildings to improve the knowledge of the existing opportunities for energy-efficient technologies and practices, including among auditors, contractors, material manufacturers, building owners, tenants and various governmental agencies. The project will promote sustainability by training Namibian professionals on EE measures and catalyzing a new market in which they will be able to use their acquired knowledge. Similarly, raising awareness on EE products and projects in the financial sector will enable financial institutions to become more familiar with the intricacies of EE financing and develop appropriate financial tools for the industry.

REPLICABILITY

124. The project is designed to create an enabling environment for market transformation of more energy efficient technologies and practices in buildings of the commercial and residential sectors through technical and financial support to government ministries, enforcement agencies and private sector operators in the design and implementation of the NEEP in buildings. One of the key requirements for successful replicability is to overcome the low penetration of EE in commercial and residential buildings due to the lack of knowledge on improvement opportunities for EE, including the energy audits cost-effectiveness; the costs of energy-efficient products and materials; and the long-term benefits of EE measures. This will be addressed through increased institutional capacity and awareness as well as the publication of EE in buildings information. Assistance will also be provided to local auditors, contractors, designers and product manufacturers through the establishment of a database, a website, and an auditors' certification program.

125. Another issue is the establishment of a suitable policy and regulatory framework for EE in buildings, including improvements in building codes during the initial period of the programme. Specific attention will be paid to address institutional and policy barriers. The implementation of standards for EE in buildings and a best practices green building rating system should make the environment more attractive for both building owners and local auditors.

126. The key elements of a replication strategy that will be put in place are the following:

- A comprehensive monitoring, feedback and evaluation system will accompany the proposed project. This will help to identify what works, what doesn't and why. Lessons will be extracted from that experience and through the project's Monitoring and Evaluation (M&E) activities and be disseminated within Namibia.
- Stakeholders from industry, retailers and consumer organizations will be fully involved in the process, particularly the process of establishing guidelines for mandatory audits in public and commercial buildings
- A conformity assessment and enforcement system will be put in place to maintain the credibility of new EE technologies adopted by the Namibian market and advertise them.

3 PROJECT RESULTS FRAMEWORK

This project will contribute to achieving the following Country Programme Outcome as defined in CPAP or CPD:

Strengthened capacity of local institutions to manage the environment and expand environment and energy services, especially to the poor .

Country Programme Outcome Indicators:

Primary applicable Key Environment and Sustainable Development Key Result Area (same as that on the cover page, circle one): 3. Promote climate change mitigation. Specifically it will result in improved efficiency of energy use in the built environment, further resulting in lower specific energy consumption and CO_2 emissions per household and square meter of building surface.

Applicable GEF Strategic Objective and Program: CC-SP1 Building EE

Applicable GEF Expected Outcomes: Outcomes include increased market penetration of energy-efficient technologies, practices, products, and materials in the residential and commercial building markets.

Applicable GEF Outcome Indicators: Indicators are, e.g., tonnes of CO_2 avoided, the adoption of energy efficiency standards, and the estimated quantity of energy saved.

Narrative	Indicator	Baseline	Targets End of Project	Source of verification	Risks and Assumptions
GOAL: Promote climate change mitigation	▪Direct annual emission reduction resulting from the investment in EE measures in buildings.	▪0 tCO_2/year avoided.	▪230,157 tCO_2 cumulatively avoided.	▪Project final report as well as annual surveys of energy consumption & reductions for each pilot building .	▪All stakeholders needed for technical or financial resources are available to enable the achievement of the project objective.
OBJECTIVE: Promote nationwide adoption of energy-efficient technologies and practices in commercial and residential buildings, and therefore reduce GHG emissions.	▪Reduction in total energy usage in the commercial and residential building sectors. ▪Market penetration of energy-efficient technologies and practices in buildings.	▪0 MWh/ year of energy savings in the building sector. ▪Lack of energy-efficient technologies and practices on the building sector market.	▪1,828 MWh/year of energy savings in the building sector. ▪Increase of energy-efficient technologies and practices in the building sector.	▪M&E report. ▪Annual surveys in the building sector.	▪Concerns and interest in energy issues will increase during and after the project implementation. ▪Proactive participation of Government, building owners, financial institutions, engineers, equipment suppliers and manufacturers.
OUTCOMES					
Component 1: **Improvement of regulations and**	▪Improvements made by the Government in the National EE policy, regulatory	▪Actual energy policy and regulatory framework as well	▪New policy and regulatory framework for EE in buildings, including building codes addressing EE ready for adoption	▪Publication of adapted policy and regulatory framework for EE	▪Government staff is willing to commit sufficient time for revising and developing regulations and building codes addressing EE standards and

building codes for energy saving in buildings developed.	framework, and building codes.	as building codes are not addressing EE.	by Parliament.	in buildings, including improved building codes.	recommendations.

Output 1.1: Improved policy and regulatory framework for EE in buildings, including building codes.	▪Formulation of a Strategic Action Plan on EE by MME (in co-operation with REEEI) in new and old buildings. ▪Identification, revision and development of building codes.	▪Strategic Action Plan on EE in new and old buildings non-existent. ▪EE standards and recommendations non-existent in actual building codes.	▪Adoption Strategic Action Plan on EE in new and old buildings. ▪Adoption of new national building codes including EE standards and recommendations.	▪Approved Strategic Action Plan on EE. ▪Approved new national building codes.	▪MME and REEEI staffs are willing to commit sufficient time for meeting and developing the Strategic Action Plan on EE in buildings. ▪Technical resources are available to guide the development of the new standards and recommendations in building codes.
Output 1.2: Detailed and compiled a list of recommended EE appliances and materials for the building sector recommended for taxes and excise duty reduction.	▪Detailed study on potential EE technologies and socio-economic survey. ▪Design of policy instruments, standards, and financial incentives ▪Reinforcement of compliance enforcement capabilities.	▪Study on potential EE technologies and socio-economic survey non-existent. ▪Lack of incentives to promote energy-efficient technologies and practices and encourage EE financing. ▪Lack of compliance enforcement capabilities focussing on EE in buildings.	▪A detailed study on potential EE technologies and socio-economic survey is conducted. ▪The design of policy instruments, standards and financial incentives by the Government to promote energy-efficient technologies and practices, and encourage EE financing. ▪Strengthening capacities and knowledge inside the Government policy unit to enable the regulation of compliance enforcement.	▪Compilation of potential EE technologies and socio-economic impact monitoring report. ▪The document presenting the design of policy instruments, standards, and financial incentives. ▪Project implementation report.	▪Data are available for sales monitoring of EE appliances and materials in the building sector as well as the various technologies already installed in buildings. ▪Government staff is willing to commit sufficient time for identifying the needs of the different stakeholder in order to develop different policy instruments, standards, and financial incentives to encourage EE. ▪Government staff is willing to commit sufficient time for participating in training activities and deepen their knowledge on EE in buildings. ▪Technical resources are available to organize training activities.
Output 1.3: EE projects developed and implemented in institutional, commercial and residential buildings (as demonstration projects).	▪Demonstration of EE benefits for buildings through pilot projects.	▪No pilot project has been implemented in Namibia to demonstrate the benefits and the effectiveness of EE technologies.	▪Twenty pilot projects are developed and implemented in institutional, commercial, and residential buildings (including a Zero Emission Building at Erongo RED Headquarters).	▪Mid-term evaluation of pilot projects. ▪Final evaluation of pilot projects.	▪The co-financing budget from public and private entities involved in the pilot projects is available. ▪Government staff is willing to support EE promotion in the building sector.
Component 2: **Provision of auditing**	▪Evaluation of capacity needs and	▪No evaluation has been conducted.	▪National evaluation on capacity needs for provision of auditing	▪Report on capacity needs assessment.	▪Government and industries are willing to commit sufficient time in the

and energy marketing services organization.	local capacity availability in the industry.		and energy marketing services organization.		capacity needs assessment and in increasing their capacity in order to respond to project needs.
Output 2.1: Stimulation of demand and supply for energy saving services and technology.	▪Enhanced capacity to undertake energy audits in buildings. ▪Program of certification for auditors.	▪Capacity to undertake energy audits in non-existent building. ▪Program of certification for non-existent auditors.	▪At least 40 local auditors are recruited and receive training on energy audits in building. ▪At least 70% of local auditors participate in the certification program.	▪List of training attendees. ▪List of certified recommended auditors.	▪Local energy experts are willing to provide time and receive training on energy audits. ▪Local auditors are willing to accept the benefits of the certification.
Output 2.2: Mandatory audits undertaken in public and commercial buildings.	▪Number of energy audits and feasibility analysis undertaken in public and commercial buildings. ▪Number of buildings where EE measures have been implemented.	▪Lack of energy audits and feasibility analysis undertaken in buildings. ▪Lack of buildings where EE measures have been implemented.	▪At least 40 energy audits and feasibility analysis undertaken in buildings. ▪EE measures implemented in at least 20 buildings.	▪Energy audit reports and feasibility analysis studies for each building. ▪Projects implementation report.	▪Owners of selected public and commercial buildings are willing to welcome auditors for conducting energy audit in their building. ▪Owners of selected public and commercial buildings are willing to invest time and money to implement the EE measures recommended in energy audits.
Component 3: **Increased institutional capacity and awareness.**	▪Institutional sector awareness and understanding of the concept of EE in buildings.	▪Lack of institutional capacity and awareness on EE in buildings.	▪Significant increase in institutional capacity and awareness.	▪Report on awareness campaign effectiveness.	▪The Government is willing to commit sufficient time in developing opportunities and campaigns to increase institutional capacity and awareness.
Output 3.1: Increased institutional capacity and awareness, and information on EE in buildings.	▪Increase in public awareness of national and local policy makers and commercial developers. ▪Database and website setup at the Namibian REEEI. ▪Establishment of a green building rating system.	▪Lack of knowledge on EE in buildings. ▪Database and website on EE in buildings non-existent. ▪Standards for best practices in buildings	▪Public is aware of the new policy and regulation framework as well as EE in general. ▪Adoption of database and website created by the Namibian REEEI. ▪Adoption of standards for best practices in buildings. Standards are set exceeding the mandatory	▪Report on awareness campaign effectiveness. ▪Existence of database and website. ▪Publication of a green building rating system.	▪The awareness campaign was effective enough to allow consumers to have the benefits of EE in mind when it is time to take a decision about their building facilities. ▪The Namibian REEEI is willing to invest sufficient time in creating resourceful information on EE in buildings. ▪Data and results on best practices in green building are available.

		non-existent.	requirements.		
Component 4: **Monitoring, feedback and evaluation.**	▪Development of a strategy to monitor and evaluate the project.	▪Monitoring, feedback, and evaluation strategy non-existent.	▪Adoption of programme monitoring, feedback and evaluation strategy.	▪The adopted Strategy Plan.	▪Government staff is willing to commit sufficient time in elaborating a Strategy Plan to verify and present the project outcomes.

Output 4.1: Structured monitoring, feedback, adaptive learning, and evaluation.	▪Monitoring of indicators through baseline, mid- and end-of-project analysis. ▪ M&E of project performance. ▪Dissemination of project results.	▪n/a ▪n/a ▪n/a	▪Establishment of a team to monitor indicators throughout the project. ▪Independent evaluation of project performance using building utility bills and other energy data consumption. ▪Presentation of the project M&E main findings to Government and stakeholders.	▪Indicators monitoring database. ▪Project M&E report. ▪Presentation documentation and list of attendees.	▪Government has sufficient resources to provide, to the staff in charge of baseline, indicators monitoring. ▪Participants are willing to provide bills and energy consumption information for each building where EE was implemented. ▪Government staff and stakeholders are willing to commit time to learn about the project outcomes and share their views.

TOTAL BUDGET AND WORK PLAN

Award ID:	00059936	Project ID(s):	00075195
Award Title:	Country Name Project Title: NAMIBIA Energy Efficiency Programme in Buildings (NEEP), under the **FRAMEWORK FOR PROMOTING LOW GREENHOUSE GAS**		
Business Unit:	*NAM10*		
Project Title:	Namibia Energy Efficiency Programme in Buildings (NEEP Project)		
PIMS no.	**4110**		
Implementing Partner (Executing Agency)	Ministry of Mines and Energy (MME)- Directorate of Energy (DE) Renewable Energy and Energy Efficiency Institute (REEEI/PON)		

The following table presents a detailed project's budget, which only includes GEF financing and co-financing in cash (no in kind co-financing).

GEF Outcome/Atlas Activity	Responsible Party/ Implementing Agent	Fund ID	Donor Name	Atlas Budgetary Account Code	ATLAS Budget Description	Amount Year 1* (USD)	Amount Year 2 (USD)	Amount Year 3 (USD)	Amount Year 4* (USD)	Total (USD)	See Budget detail in CEO endorsement
OUTCOME 1: IMPROVEMENT OF REGULATIONS AND BUILDING CODES FOR ENERGY SAVING IN BUILDINGS DEVELOPED (as per the results framework)	**MME/REEEI**	**62000**	**GEF**	71200	International consultants	$50 000	$20 000	$20 000	$0	$90 000	x
				71300	Local consultants	$50 000	$50 000	$40 000	$20 000	$160 000	x
					Sub-total	**$100 000**	**$70 000**	**$60 000**	**$20 000**	**$250 000**	
OUTCOME 2: PROVISION OF AUDITING AND ENERGY MARKETING SERVICES ORGANIZATION (as per the results framework)	**MME/REEEI**	**62000**	**GEF**	71200	International consultants	$50 000	$20 000	$20 000	$20 000	$110 000	x
				71300	Local consultants	$40 000	$30 000	$30 000	$30 000	$130 000	x
					Sub-total	**$90 000**	**$50 000**	**$50 000**	**$50 000**	**$240 000**	
OUTCOME 3: INCREASED INSTITUTIONAL	**MME/REEEI**	**62000**	**GEF**	71200	International consultants	$50 000	$50 000	$0	$0	$100 000	X
				71300	Local consultants	$30 000	$30 000	$20 000	$20 000	$100 000	x

CAPACITY AND AWARENESS (as per the results framework)					**Sub-total**	**$80 000**	**$80 000**	**$20 000**	**$20 000**	**$200 000**	
OUTCOME 4: MONITORING, LEARNING, ADAPTIVE FEEDBACK & EVALUATION (as per the results framework and M&E Plan and Budget)	**MME/REEEI**	**62000**	**GEF**	71200	International consultants	$0	$30 000	$20 000	$20 000	$70 000	x
				71300	Local consultants	$0	$9 000	$5 000	$5 000	$19 000	x
					Sub-total	**$0**	**$39 000**	**$25 000**	**$25 000**	**$89 000**	
PROJECT MANAGEMENT UNIT (This is not to appear as an Outcome in the Results Framework and should not exceed 10% of project budget)	**MME/REEEI**	**62000**	**GEF**	71200	International consultants	$12 500	$12 500	$12 500	$12 500	$50 000	x
				71300	Local consultants	$5 000	$5 000	$5 000	$5 000	$20 000	x
				71600	Travel	$2 500	$2 500	$2 500	$2 500	$10 000	
					Sub-total	**$20 000**	**$20 000**	**$20 000**	**$20 000**	**$80 000**	
					PROJECT TOTAL	**290,000$**	**259 000$**	**175 000$**	**135 000$**	**$ 859 000**	

*Note: Only 6 months are accounted for Year 1 and Year 4 since project starts middle of year and end middle of year.

Summary of Funds: [14]

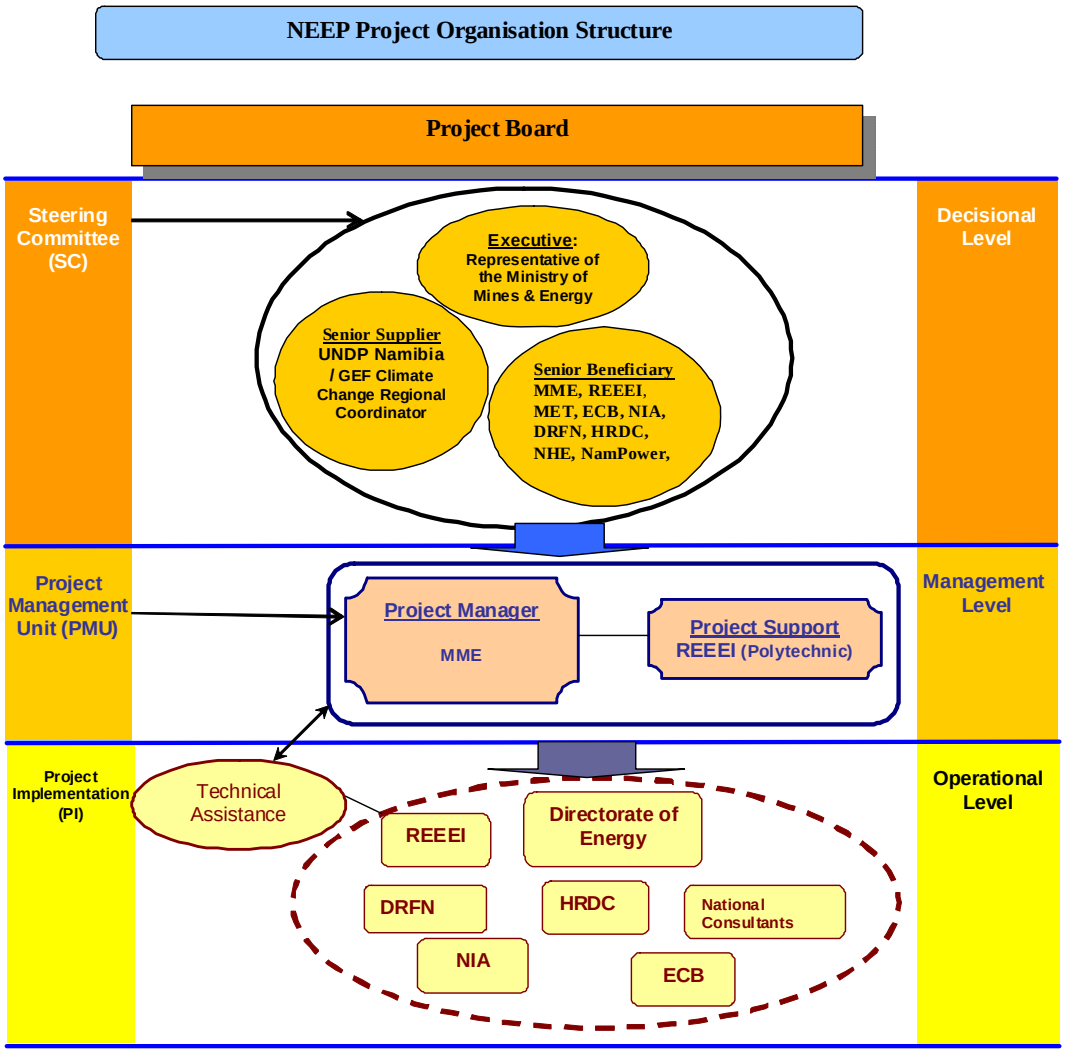
	Amount Year 1	Amount Year 2	Amount Year 3	Amount Year 4	Total
GEF	$290 000	$259 000	$175 000	$135 000	$859 000
Government, MME (Cash/In-kind)	$600 000	$800 000	$800 000	$894 000	$3 094 000
Polytechnic of Namibia (Cash/In-kind)	$430 000	$350 000	$350 000	$0	$1 130 000
Erongo RED (Cash/In-kind)	$300 000	$250 000	$250 000	$0	$800 000
Osona West Party (Cash/In-kind)	$49 000	$40 000	$40 000	$0	$129 000
Arandis Town Council (In-kind)	$40 000	$30 000	$30 000	$0	$100 000
TOTAL	$1 709 000	$1 729000	$1 645 000	$1 029 000	$6 112 000

[14] *Summary table should include all financing of all kinds: GEF financing, cofinancing, cash, in-kind, etc...*

4 MANAGEMENT ARRANGEMENTS

127.The project will be managed according to the National Execution modality (NEX) of the UN. The Ministry of Mines and Energy (MME) is the Implementing Partner and is accountable to the GoN and UNDP/GEF for ensuring: (i) the substantive quality of the project, (ii) the effective use of both international and national resources allocated to it, (iii) the availability of time for national contributions to support project implementation, and (iv) the proper coordination among all project stakeholders, in particular national parties. MME will be responsible to UNDP for the achievement of the project objectives and for all project reporting, including the submission of work plans and financial reports. As executing agency, MME will ensure the delivery of the project outputs and the judicious use of the project resources.

Diagram of Project Partners and Management



128. Additional Technical Assistance Stakeholders:

- ALAN (Association of Local Authorities in Namibia)
- MWT (Ministry of Works and Transport)
- Association of Consulting Engineers

129. The project will establish a **Project Steering Committee (PSC),** and a **Project Management Unit (PMU)** at the inception of the project. The PSC will meet at least every six months and will be convened and supported logistically by the PMU. The PSC is responsible for making management decisions for a project in particular when guidance is required by the Project Manager. The Steering Committee plays a critical role in project monitoring and evaluations by quality assuring these processes and products, and using evaluations for performance improvement, accountability and learning. It ensures that required resources are committed and arbitrates on any conflicts within the project or negotiates a solution to any problems with external bodies. In addition, it approves the appointment and responsibilities of the Project Manager and any delegation of its Project Assurance responsibilities. Based on the approved Annual Work Plan, the Steering Committee can also consider and approve the quarterly plans (if applicable) and also approve any essential deviations from the original plans.

130. The PSC will be chaired by the MME and will provide overall guidance for the project throughout its implementation. Specifically, the PSC will be responsible for:

- achieving co-ordination among the various government agencies;
- guiding the program implementation process to ensure alignment with national and international policies, plans and strategies;
- ensuring that activities are fully integrated with other developmental initiatives;
- overseeing work of implementation units, monitoring progress and approving reports;
- overseeing the financial management and production of financial reports;
- monitoring the effectiveness of project implementation; and
- Preparing regular report-backs for the representing Departments/Institutions.

131. In order to ensure UNDP's ultimate accountability for the project results, Steering Committee decisions will be made in accordance to standards that shall ensure management for development results, best value money, fairness, integrity, transparency and effective international competition. In case consensus cannot be reached within the Committee, the final decision shall rest with the UNDP Project Manager.

132. Potential members of the Steering Committee are reviewed and recommended for approval during the PAC meeting. Representatives of other stakeholders can be included in the Committee as appropriate. The Steering Committee contains three distinct roles, including:

1) **An Executive**: individual representing the project ownership to chair the group.
    - *e.g. Representative of the Government Cooperating Agency or UNDP*
2) **Senior Supplier**: individual or group representing the interests of the parties concerned which provide funding for specific cost sharing projects and/or technical expertise to the project. The Senior Supplier's primary function within the Board is to provide guidance regarding the technical feasibility of the project.
    - *e.g. Representative of the Implementing Partner and/or UNDP*
3) **Senior Beneficiary**: individual or group of individuals representing the interests of those who will ultimately benefit from the project. The Senior Beneficiary's primary function within the Board is to ensure the realization of project results from the perspective of project beneficiaries.
    - *e.g. Representative of the Government or Civil Society.*

4) The **Project Assurance** role supports the Project Board Executive by carrying out objective and independent project oversight and monitoring functions. The Project Manager and Project Assurance roles should never be held by the same individual for the same project.
    - *E.g. A UNDP Staff member typically holds the Project Assurance role.*

133. The administration of the project will be carried out by a **Project Management Unit (PMU)** under the overall guidance of the PSC. The Project Manager has the authority to run the project on a day-to-day basis on behalf of the Implementing Partner within the constraints laid down by the Board. The Project Manager's prime responsibility is to ensure that the project produces the results specified in the project document, to the required standard of quality and within the specified constraints of time and cost. More specifically, the role of the PMU will be to:

- ensuring the overall project management and monitoring according to UNDP rules on managing UNDP/GEF projects;
- facilitating communication and networking among key stakeholders including PSC;
- organizing the meetings of the PSC; and
- Supporting the relevant stakeholders.

134. **Project Implementation**: The Project Implementation role provides project administration, management and technical support to the Project Manager as required by the needs of the individual project or Project Manager.

5 MONITORING FRAMEWORK AND EVALUATION

135. The project will be monitored through the following M& E activities. The M& E budget is provided in the table below.

Project start:

136. A Project Inception Workshop will be held within the first 4months of the project starting with those with assigned roles in the project organization structure, UNDP country office and where appropriate/feasible regional technical policy and programme advisors as well as other stakeholders will be invited. The Inception Workshop is crucial to building ownership for the project results and to plan the first year annual work plan.

137. The Inception Workshop should address a number of key issues including:

a) Assist all partners to fully understand and take ownership of the project. Detail the roles, support services and complementary responsibilities of UNDP CO and RCU staff vis à vis the project team. Discuss the roles, functions, and responsibilities within the project's decision-making structures, including reporting and communication lines, and conflict resolution mechanisms. The Terms of Reference for project staff will be discussed again as needed.
b) Based on the project results framework and the relevant GEF Tracking Tool if appropriate, finalize the first annual work plan. Review and agree on the indicators, targets and their means of verification; recheck assumptions and risks. Familiarisation with the annual GEF PIR process, and templates.
c) Provide a detailed overview of reporting, monitoring and evaluation (M&E) requirements. The Monitoring and Evaluation work plan and budget should be agreed and scheduled.
d) Discuss financial reporting procedures and obligations, and arrangements for annual audit.
e) Plan and schedule Project Board meetings. Roles and responsibilities of all project organisation structures should be clarified and meetings planned. The first Project Board meeting should be held within the first 12 months following the inception workshop.

138. An Inception Workshop report is a key reference document and must be prepared and shared with participants to formalize various agreements and plans decided during the meeting.

Quarterly:

- Progress made shall be reported in the Standard Progress Report (SPR) and monitored in the UNDP Enhanced Results Based Managment Platform.
- Based on the initial risk analysis submitted, the risk log shall be regularly updated in ATLAS (if applicable otherwise outside ATLAS). Risks become critical when the impact and probability are high. Note that for UNDP GEF projects, all financial risks associated with financial instruments such as revolving funds, microfinance schemes, or capitalization of ESCOs are automatically classified as critical on the basis of their innovative nature (high impact and uncertainty due to no previous experience justifies classification as critical).
- Based on the information recorded in Atlas, a Project Progress Reports (PPR) can be generated in the Executive Snapshot.
- Other ATLAS logs can be used to monitor issues, lessons learned etc... The use of these functions is a key indicator in the UNDP Executive Balanced Scorecard.

Annually:

- Annual Project Review/Project Implementation Reports (APR/PIR): This key report is prepared to monitor progress made since project start and in particular for the previous reporting previous reporting period (30 June to 1 July). The APR/PIR combines both UNDP and GEF reporting requirements.

  The APR/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.
  - AWP and other expenditure reports
  - Risk and adaptive management
  - ATLAS QPR
  - Portfolio level indicators (i.e. GEF focal area tracking tools) are used by most focal areas on an annual basis as well.

Periodic Monitoring through site visits:

139. UNDP CO and the UNDP RCU staff will conduct visits to project sites based on the agreed schedule in the project's Inception Report/Annual Work Plan to assess first hand project progress. Other members of the Project Board may also join these visits. A Field Visit Report/BTOR will be prepared by the CO and UNDP RCU and will be circulated no less than one month after the visit to the project team and Project Board members.

Mid-term of project cycle:

140. The project will undergo an independent Mid-Term Evaluation at the mid-point of project implementation. The Mid-Term Evaluation will determine progress being made toward the achievement of outcomes and will identify course correction if needed. It will focus on the effectiveness, efficiency and timeliness of project implementation; will highlight issues requiring decisions and actions; and will present initial lessons learned about project design, implementation and management. Findings of this review will be incorporated as recommendations for enhanced implementation during the final half of the project's term. The organization, terms of reference and timing of the mid-term evaluation will be decided after consultation between the parties to the project document. The Terms of Reference for this Mid-term evaluation will be prepared by the UNDP CO based on guidance from the Regional Coordinating Unit and UNDP-GEF. The management response and the evaluation will be uploaded to UNDP corporate systems, in particular the UNDP Evaluation Office Evaluation Resource Center (ERC).

141. The relevant GEF Focal Area Tracking Tools will also be completed during the mid-term evaluation cycle.

End of Project:

142. An independent Final Evaluation will take place three months prior to the final Project Board meeting and will be undertaken in accordance with UNDP and GEF guidance. The final evaluation 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). The final evaluation will look at impact and sustainability of results, including the contribution to capacity development and the achievement of global environmental benefits/goals. The Terms of Reference for this evaluation will be prepared by the UNDP CO based on guidance from the Regional Coordinating Unit and UNDP-GEF.

143. The Terminal Evaluation should also provide recommendations for follow-up activities and requires a management response which should be uploaded to PIMS and to the UNDP Evaluation Office Evaluation Resource Center (ERC).

144. The relevant GEF Focal Area Tracking Tools will also be completed during the final evaluation.

145. During the last three months, 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.

Learning and knowledge sharing:

146. Results from the project will be disseminated within and beyond the project intervention zone through a number of existing information sharing networks and forums. In addition:

- The project will participate, as relevant and appropriate, in UNDP/GEF sponsored networks, organized for senior personnel working on projects that share common characteristics.
- 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 though lessons learned.

147. The project will identify, analyze, and share lessons learned that might be beneficial in the design and implementation of similar future projects. Identifying and analyzing lessons learned is an on-going process and the need to communicate such lessons as one of the project's central contributions is a requirement to be delivered not less frequently than once every 12 months. UNDP/GEF shall provide a format and assist the project team in categorizing, documenting and reporting the lessons learned. To this end a percentage of project resources will also need to be allocated for these activities.

M&E WORKPLAN AND BUDGET

Type of M&E activity	Responsible Parties	Budget US$ *Excluding project team staff time*	Time frame
Inception Workshop and Report	▪ Project Manager ▪ UNDP CO, UNDP GEF	$25 000	Within first four months of project start up
Measurement of Means of Verification of project results.	▪ Project Manager supported by UNDP CO /GEF RTA/will oversee the hiring of institutions for specific studies and delegate responsibilities to relevant team members.	To be finalized in Inception Phase and Workshop.	Start, mid and end of project (during evaluation cycle) and annually when required.
Measurement of Means of Verification for Project Progress on *output and implementation*	▪ Oversight by Project Manager ▪ Project team	To be determined as part of the Annual Work Plan preparation.	Annually prior to APR/PIR and in accordance with the definition of annual work plans
APR/PIR	▪ Project manager and team ▪ UNDP CO ▪ UNDP RTA ▪ UNDP EEG	None	Annually
Periodic status/ progress reports	▪ Project manager and team	None	Quarterly
Mid-term Evaluation	▪ Project manager and team ▪ UNDP CO ▪ UNDP RCU ▪ External Consultants (i.e. evaluation team)	$40,000	At the mid-point of project implementation.
Final Evaluation	▪ Project manager and team, ▪ UNDP CO ▪ UNDP RCU ▪ External Consultants (i.e. evaluation team)	$60,000	At least three months before the end of project implementation
Project Terminal Report	▪ Project manager and team ▪ UNDP CO ▪ local consultant	$0	At least three months before the end of the project
Audit	▪ UNDP CO ▪ Project manager and team	$10,000	Yearly
Visits to field sites	▪ UNDP CO ▪ UNDP RCU (as appropriate) ▪ Government representatives	$40,000	Yearly
TOTAL indicative COST (excluding project team staff time and UNDP staff and travel expenses)		$175,000	

6 LEGAL CONTEXT

148. This document together with the CPAP signed by the Government and UNDP which is incorporated by reference constitute together a Project Document as referred to in the SBAA [or other appropriate governing agreement] and all CPAP provisions apply to this document.

149. Consistent with the Article III of the Standard Basic Assistance Agreement, the responsibility for the safety and security of the implementing partner and its personnel and property, and of UNDP's property in the implementing partner's custody, rests with the implementing partner.

150. The implementing partner shall:

a) put in place an appropriate security plan and maintain the security plan, taking into account the security situation in the country where the project is being carried;

b) Assume all risks and liabilities related to the implementing partner's security, and the full implementation of the security plan.

151. UNDP reserves the right to verify whether such a plan is in place, and to suggest modifications to the plan when necessary. Failure to maintain and implement an appropriate security plan as required hereunder shall be deemed a breach of this agreement.

152. The implementing partner agrees to undertake all reasonable efforts to ensure that none of the UNDP funds received pursuant to the Project Document are used to provide support to individuals or entities associated with terrorism and that the recipients of any amounts provided by UNDP hereunder do not appear on the list maintained by the Security Council Committee established pursuant to resolution 1267 (1999). The list can be accessed via http://www.un.org/Docs/sc/committees/1267/1267ListEng.htm. This provision must be included in all sub-contracts or sub-agreements entered into under this Project Document.

ANNEXES A: INVOLVEMENT OF STAKEHOLDERS

Level of collaboration among stakeholders and the level of policy instrument and involvement of Line Ministries / institutions

Stakeholders (Line Ministries, Academia, Parastatals, NGOs, Private Sector including Banks)	Policy issues	R&D / Training	Financing	Networking /Level of involvement & collaboration
Ministry of Mines and Energy (MME)	Drafting and formulation of Policies related to RETs, RE-EE. Administer Energy White Paper, Implementation of RE off-grid, implement strategic Action Plan on RE-EE	Continue to promote R & D for RETs, RE-EE in the country and provide capacity building amongst others; on the training of Private Sector (PV industry), the NGOs staff and the Government dealing with RE-EE issues.	Improve financial allocation to RETs, RE-EE in the country	Cooperate with international and local stakeholders & support the incorporation of the goals of policies aimed at achieving a level playing field between RESs and grid electricity into the regulatory and institutional sub-sector to promote EE.
Ministry of Environment and Tourism	Implement policies and measures designed to mitigate the effects of climate change and to adapt to such changes	Research and development of alternative energy technologies and EE	Mobilization of financial support through the GEF for the climate change project activities.	Overseeing the coordination of Climate Change issues in the country and the implementation of the SNC project in order to fulfil the country`s obligations under the Convention and the GEF focal point
Ministry of Finance	Implement GRN policy on RETs, RE-EE	Support national capacity on RETs development	Provide financial support through budget allocation to Line Ministries and GRN institutions involved in RETs, RE-EE development	International and local stakeholders
Ministry of Works & Transport	Implement GRN policy on RETs and RE-EE	Facilitate the training of technical and maintenance staff embarking upon commissioning of RETs projects to areas of ministry`s engagement.	Facilitate /allocate budget for the implementation /delivery of SETs activities to areas of operationalization.	Through its Department of Works, the ministry is responsible for maintenance of SETs, RE-EE at Government buildings
Ministry of Trade and Industry	Implement GRN policy on RETs and RE-EE	Promote trade and investment on RETs RE-EE products &	Develop incentives approaches for RETs, RE-EE	Through its industrial development strategy the

		technology in the country	imports and influence lower taxation on RETs	ministry integrates RETs, RE-EE in industrial development and in the forefront of Foreign Direct Investment for RETs, RE-EE in the country.
Ministry of Local Government, Housing & Rural Development	Implement GRN policy on RETs and RE-EE	Promote RETs, RE-EE applications to regional & local government authorities.	Disbursement of budget to regional & local government authorities on RETs, RE-EE projects.	Through development of new housing scheme for war veteran, the ministry provide solar systems for lighting and water heating to promote EE
Ministry of Health and Social Services	Implement GRN policy on RETs and RE-EE	Facilitate the training of hospital/clinic maintenance staff embarking upon commissioning of RETs projects at clinics.	Facilitate /allocate financial requirement for the implementation /delivery of SETs activities to clinics.	Involved in SET delivery activities to clinics nationwide and that are off-grid located to promote EE.
Ministry of Education	Implement GRN policy on RETs and RE-EE	Tasked with RETs & RE-EE curricular development to institutions of primary and high learning.	Facilitate /allocate budget for the implementation of RETs curricular.	Involved in SETs delivery activities i.e. schools for lighting & information technologies and promote switching over from EWH / boilers to SWHs to promote EE.
Ministry of Agriculture, Water and Forestry	Implement GRN policy on RETs and RE-EE	Facilitate the training of maintenance staff embarking upon commissioning of RETs projects to areas of ministry`s engagement.	Facilitate /allocate budget for the implementation /delivery of SETs activities to areas of operationalization.	Involved in SET delivery activities , i.e. PV pumps to its water-points nationwide and that are off-grid located to promote EE
National Planning Commission Secretariat	Support GRN policy on RETs and RE-EE	Provide financial support on R & D for RETs, RE-EE and assist training institution embarking upon RETs & RE-EE development.	Provide financial support to training institutions to develop HR strategies in the country	Responsible for mobilization of financial resources from the international community (bilateral and multilateral agencies)
Regional Councils, Local Authorities & Municipalities	Support GRN policy on RETs and RE-EE	Provide support in kind to its constituencies on RETs	Provide financial support to training of RETs technicians to develop HR strategies in their regions	Through regional development planning, integrate RETs in planning process for their regions
Electricity Control Board	Regulatory body to	Develop national capacity for	The ECB is finance through	International & National

	implement Energy White Paper & Electricity Act of 2000	stakeholders to understand the energy policy frame-work Enhance HR capacity development to comprehend energy policy issues	Government, private sector, NGOs, Donors	stakeholders
Renewable Energy and Energy Efficiency Institute	Implementation of National Strategic Action Plan for RE & EE, Off-grid Energisation Master-Plan, Off-grid electrification and NEEP in Buildings	Develop national capacity in implementing RE-EE plans/documents & Develop HR capacity & resources development	The REEEI is financed through MME, & private sector, donors and mobilize funds from multilateral and bilateral community to funds RE-EE projects	International & national stakeholders
Polytechnic of Namibia	Support implementation of energy Policy issues & RE-EE	Development of national HR capacity and Develop of strategies in developing RE-EE	Support from GRN and private sector and donors	International and local stakeholders
University of Namibia	Develop implementation strategy for academic research for RETs, RE-EE	Establish internal capacity to support RETs for promotion, implementation and integrate them in curriculum & Develop strategies approach for Research and development for RETs, RE-EE	Increase financial allocation for RETs, RE-EE to further strengthen the existing efforts	International and local stakeholders
Windhoek Vocational Training Centres (WVTC)	Support GRN policy issues on RE –EE issues	Training of trainers in RE-EE and PV-SWH & Develop & implement action plans as designed for RE & EE	Support from GRN and private sector and donors	International and local stakeholders
Sustainable Energy Namibian Society (SENSE - Network)	Support GRN policy issues on RE –EE issues	Encourage public awareness for RE & EE and Influence new technology approach & benefits to consumers	Support from civil society, GRN, private sector & donors	International and local stakeholders
UNDP Namibia	Support implementation	Supplement development of national capacity for RE-EE & Support country efforts to develop national capacity and RE-EE resources development	GEF Implementing Agency and other financing partners	International and local stakeholders
GEF	Support the implementation	Supplement development of	Provide project finance as	International and local

	of Energy Policy issues	national capacity for RE-EE & Support country efforts to develop national capacity and development of RE-EE resources	main financier	stakeholders
DANIDA	Support the implementation energy Policy issues	Training for Institutions in RE-EE & Support HR capacity development	Co-financing capacity	International and local stakeholders
KfW (German Development Cooperation) Windhoek Office	Support the implementation of Energy Policy issues	Supplement development of national capacity for RE-EE & Support country efforts to develop national capacity and development of RE-EE resources	KfW is to establish of an EE promotion credit line that could be managed by the Development Bank of Namibia benefiting to building owners as well as local ESCOs.	International and local stakeholders
Namibia Power Corporation (Pty) Ltd (NAMPOWER)	Support GRN energy policies on RE-EE issues	Invest and develop renewable energy projects to generate electricity & Support development for RE –EE both technical & human resources	Financial contribution to develop RE-EE in the country	International and local stakeholders
Regional Electricity Distribution Companies (REDs)	Support GRN energy policies on RE-EE issues	Invest and develop renewable energy projects to generate electricity & Support development for RE –EE both technical & human resources	Financial contribution to develop RE-EE in the country	International and local stakeholders
Mobile Telecommunication Limited (MTC)	Support GRN policy on RETs and RE-EE	Assist training institution embarking upon RETs & RE-EE development, support HR national capacity	Provide financial support to training institutions to develop HR strategies in the country	International and local stakeholders
Telecom Namibia Limited	Support GRN policy on RETs and RE-EE	Assist training institution embarking upon RETs development, support HR national capacity & Support existing national efforts to	Provide financial support to training institutions to develop HR strategies in the country	International and local stakeholders

		develop national capacity in RETs for market development		
Namibia Broadcasting Corporation Limited	Support GRN efforts/policy to develop RETs, RE-EE	To serve as advocacy platform to disseminate RETs, RE-EE to the public & to serve as transmission belt to carry GRN voice to reach the consumers	Limited capacity to contribute in this area	Inform stakeholders through NBC program on RETs
Namibia Wildlife Resorts Limited	Support GRN policy and develop internal policy to support RETs, RE-EE in tourism sector	To develop strategies for R & D research	Contribute financially to the development of RETs, RE-EE in the country	International and local stakeholders
National Housing Enterprises (NHE)	Support GRN policy on RETs, RE-EE	Develop synergy with other stakeholders on RETs & Implementation of RETs, RE-EE in all new housing development projects	To contribute to RETs, RE-EE for integration	International, regional, continental and local stakeholders
Commercial Banks	Support GRN policy on RETs and RE-EE	Financial support to other institutions on R & D for RETS & Provide financial support to training institutions to develop HR strategies in the country	Develop affordable financial schemes to assist RETs, RE-EE market growth	International and local stakeholders
Namibia Institute of Architects	Support GRN policy on RETs and RE-EE	Promote architecture and sound architectural practice among the Namibian architectural profession and general public of Namibia & Southern Africa	Provide financial support for the Continuing Professional Development (CPD) courses and other informative slide shows, lectures and exhibitions. Assist with publications showcasing Namibian architects' work.	International, regional and local stakeholders
Namibia Manufacturers Association	Support GRN policy on RETs and RE-EE in	Facilitate a sustainable, competitive and prosperous	Mobilization of finances (equity) towards RETs, RE-	International, regional and local stakeholders

	manufacturing & processing industry in the country	manufacturing and processing industry for all stakeholders' benefit	EE development in manufacturing and processing industry	
Namibia Chambers of Commerce and Industry	Support GRN policy on RETs and RE-EE	Implementation support of RE-EE to participating private sector companies,	Mobilization of finances (equity) towards RETs, RE-EE development in participating private sector companies,	International, regional and local stakeholders
Non Governmental Organizations (NGOs) (HRDC, DRFN, IPPR, NEPRU)	Support GRN policy on RETs and RE-EE	Support country's efforts on RETs, RE-EE development & Support national efforts to develop HR capacity and market growth	Mobilization of finances towards RETs, RE-EE development	International and local stakeholders

SIGNATURE PAGE

Country: Namibia

UNDAF Outcome (s)/Indicator (s): By 2010/12, livelihoods and food security among most vulnerable groups are improved.

UNDP Focus Area /Key Result Area: Energy and Environment for sustainable development/Mainstreaming energy and environment /Expanding access to environmental and energy services for the poor

CPAP Outcome (s)/) Strengthened national capacities to mainstream environment and energy concerns into national development plans and implementation systems. Strengthened capacity of local institutions to manage the environment and expand environment and energy services, especially to the poor.

CPAP /Project Output (s)/Indicator (s):

Outcome 1:

Improvement of regulations and building codes for energy saving in buildings developed

(as per the results framework)

Outcome 2:

Provision of auditing and energy marketing services organization

(as per the results framework)

Outcome 3:

Increased institutional capacity and awareness

(as per the results framework)

Outcome 4: monitoring, learning, adaptive feedback & evaluation

(as per the results framework and M&E plan and budget)

Executing Entity/Implementing Partner: Ministry of Mines and Energy, Directorate of Energy

Implementing Entity/Responsible Partner: Renewable Energy and Energy Efficiency Institute (REEEI), Polytechnic of Namibia

Programme Period:	2006-2010/12
Atlas Award ID:	00059936
Project ID:	00075195
PIMS #	PIMS 4110 CC MSP: NEEP Namibia Energy Efficiency Program
Start date:	May 2010
End Date	July 2013
Management Arrangements:	National Execution (NEX)
PAC Meeting Date:	23 March 2010

Total resources required: USD 6,112,000

- Regular(GEF): USD 859,000
- Government: USD 3,094,000
- Other: USD 2,159,000
- In-kind contributions _____

On Behalf of	Signature	Date	Name/Title
Government of Namibia (**National Planning Commission Secretariat**)			Mr. Levi Hungamo Permanent Secretary
Executing Entity/Implementing Partner (**Ministry of Mines and Energy**)			Mr. Joseph Iita Permanent Secretary
United Nations Development Programme (UNDP) Namibia			Ms. Kari Egge Resident Representative

APPENDIX:

Annex 1: UNDP GEF MSP Delegation of Authority (DOA)

The DOA letter is separately enclosed