

Resource assessment and logistics.	Undertake a study on resource assessment and logistics at promising sites to include their suitability for use in biomass gasifiers for electricity generation.	Resource assessment and logistics undertaken	DOE, REA, ZDA, Consultants, Private sector	12 months	20,000
	Select feedstock suitable for biomass gasifier operations and identify suitable locations influenced by demand.	Feedstock suitable for biomass gasifier selected and suitable locations identified to feed into implementation plan			
Implementation program and support policies for biomass gasifier.	Develop implementation program for biomass gasifier dissemination identified locations	Implementation program developed	DOE, REA, ZDA, Consultants, Private sector, Financial institutions	12 months	50,000
	Provides support policies in terms of incentives and public finance for off-grid systems to leverage tariff	Support policies in terms of incentives and public finance provided.			
	Recommend business model for implementation of biomass gasifier for electricity generation dissemination.	Business model recommended			
	Develop the project for biomass gasifier to meet the criteria of eligibility, baseline setting and MRV to benefit from carbon financing through CDM/PoA/NAMA/SE4ALL/LEDS	Project for biomass gasifier developed to benefit from CDM/PoA/NAMA/SE4ALL/LEDS			

Various actors will have different roles in relation to the strategic objectives and related activities requiring attention

3.3 Energy Management – Energy Efficiency

This measure involves introduction of energy efficiency and management tools aimed at improving energy use in industrial, commercial/services and household. Under industry, technologies include on site electricity generation, energy system optimisation and energy management standards. This measure is relatively low cost and contributes to reduced cost and hence enhanced competitiveness of affected industrial concerns in addition to reduction of GHG emissions. Under commercial/ services, the technologies include air conditioning efficiency, load control measures, and ripple control technologies. Under household use, the measures include use of Compact Fluorescent Lights (CFL) or Light Emitting Diodes lights (LEDs) and solar water heater (for domestic and commercial entities). All these measures contribute to reduction in electrical energy demand and avoids premature investments in energy supply in addition to reducing GHG emissions and air pollution

The SNDP strategic goal and focus on Energy Efficiency and Management stipulates development and implementation of Energy Efficiency Strategy with the main objectives of ensuring major industrial sectors public institutions and households bring their energy intensities in line internationally acceptable standards and best practice. The target of diffusion of Energy Efficiency measures and technologies is to contribute to the implementation of the strategy through reduction of energy use in the electricity sector equivalent 200 MW in the year 2020, and leading to avoidance of 1,400,000Co₂ equiv and saving of US\$85million by the industrial, commercial and household sectors

Strategic Objective	Deployment of energy efficiency and management				
Strategies	Output		Responsibility	Timeframe	Budget(Estimated Budget)
	Objective verifiable activity	Means of verification	Key actors		
Creating awareness and information program for industrial and commercial entities and municipalities	Develop awareness and information program on EF opportunities and benefits, technology costs, standards for industry, commercial/service entities and municipalities	Awareness and information program on EF opportunities developed.	DOE, Ministry of Commerce, Trade and Industries, ZACCI and ZAM, Bureau of Standards, Zesco, Financial institutions	36 months	100,000
	Disseminate awareness and information program on EF opportunities and benefits, technology costs, standards for industry, commercial/services entities and municipalities	Financing mechanisms for industrial and commercial entities and municipalities disseminated			
Introduction of energy management program to industrial and commercial entities and municipalities	Develop baseline settings on energy consumption and associated GHG emissions for base year 2010 and projections up to for industry, commercial/services entities and municipalities	Baseline energy consumption determined for industry, commercial/services entities and municipalities	DOE, Ministry of Commerce, Trade and Industries, ZACCI and ZAM, Bureau of Standards, Zesco, Financial institutions	36 months	300 000
	Identify EF opportunities, services and market for industry, commercial/services entities and municipalities	Opportunities, services and market for industry, commercial/services entities and municipalities identified			
	Identify and select EF measures and portfolio of technologies for reducing energy consumptions and	EF measures and portfolio of technologies for reducing energy consumptions and GHG emissions for industry, commercial/services			

	GHG emissions for industry, commercial/services entities and municipalities	entities and municipalities identified			
	Determine investment costs and operations and maintenance costs for measures and technologies identified for implementation for baseline and projected up to 2020	Investment costs and operations and maintenance costs for measures and technologies identified for implementation for baseline and projected up to 2020 determined			
	Undertake financial analysis of selected measures and technologies to ascertain viability	Viability of measures and technologies verified			
	Assess/review financing including carbon financing and investment requirements for implementation of selected measures and technologies	Financing including carbon financing and investment requirements assessed and determined			
	Develop the projects for EF to meet the criteria of eligibility, baseline setting and MRV to benefit from carbon financing through CDM/PoA/NAMA/SE4ALL/LEDS	Projects for EF developed to benefit from CDM/PoA/ NAMA/SE4ALL/LEDS			
Provision of financial mechanisms and incentives	Provide financial mechanisms and incentives for implementation of selected measures and technologies	Financial mechanisms and incentives implementation of selected measures and technologies introduced and provided	DOE, Ministry of Commerce, Trade and Industries, ZACCI and ZAM, Bureau of Standards, Zesco, Financial institutions	12 months	50 000
	Provide private equity/venture capital, self financing, debt financing, public funds from international financial institutions, innovative financing (carbon finance)	Private equity/venture capital, self financing, debt financing, public funds from international financial institutions, innovative financing provided.			
Formulation of a national energy efficiency and management policy, strategy,	Develop policy, strategy and action plan to include: fiscal incentives and regulatory tools, vision and mission for EF strategy.	Policy, strategy and action plan to include: fiscal incentives and regulatory tools, vision and mission for EF developed.	DOE, Ministry of Commerce, Trade and Industries, ZACCI and ZAM, Bureau of Standards, Zesco,	6 months	20 000

and action plan	Develop strategic intervention measures, target objectives and activities, action plan, all for implementation of EF program	Strategic intervention measures, target objectives and activities, action plan, all for implementation of EF program developed.	Financial institutions		
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Various actors will have different roles in relation to the strategic objectives and related activities requiring attention

3.4 Sustainable Charcoal Utilization and Production

Sustainable charcoal involves both sustainable forest management, and use of efficient improved kilns and stoves. The basic components of sustainable charcoal systems include supply and demand side interventions. Supply side interventions are aimed at managing forest resources for charcoal production to include: (i) agro forestry, (ii) woodlot management, (iii) controlled exploitation of forestry resources, (iv) improved carbonization skills and technologies. Demand side interventions include: promote use of improved cookstoves and briquetting, (ii) create awareness on energy conservation, and encourage use of eco-charcoal concept of certification.

In view of the strong relationship between charcoal utilization through use of cooking stoves and charcoal production and their combined effects on deforestation and forest degradation and associated GHG emissions, the actions on improved charcoal production and improved cooking stoves have been merged and considered in a holistic manner considering the entire sustainable charcoal value chain. The value chain involves the following processes to include; (i) forest resources and production, (ii) harvest conversion, (iii) packaging and harvesting , (iv) transport, (v) marketing , (vi) consumption, (vii)financing

The SNDP strategic objective under natural resources is the promotion of sustainable forest and land management in particular focusing on expanding options for effective forest management. The target of diffusion for sustainable value chains technology is aimed at contributing to the attainment of the strategy above. Once implemented, the measure will go along way to the contribution of reduction of the current deforestation rate estimated between 250,000 to 300,000 hectares per year.

Strategic Objective	Development of a sustainable charcoal value chain framework and implementation				
Strategies	Output		Responsibility	Timeframe	Budget(Estimated Budget)
	Objective verifiable activity	Means of verification	Key actors		
Strengthen forest resources and	Strengthen the Forest Act to include specifically charcoal production	Forest Act strengthened with introduction of specific charcoal production regulation.	FD, Local Government,	12 months	20,000