



PROGRAM FRAMEWORK DOCUMENT (PFD)
THE GEF TRUST FUND

Submission Date: 12 September 2008

Re-submission Date:

PART I: PROGRAM INFORMATION

GEFSEC PROGRAM ID¹:

GEF AGENCY PROGRAM ID:

COUNTRY(IES): Benin, Burkina Faso, Burundi, Cape Verde, Cote d'Ivoire, Chad, The Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone, Togo

REGION: Africa

PROGRAM TITLE: GEF Strategic Program for West Africa (GEF-SPWA): Energy Component

GEF LEAD AGENCY: UNIDO

OTHER GEF AGENCIES: World Bank, UNDP, UNEP, AfDB and Others

GEF FOCAL AREA (S): CLIMATE CHANGE

GEF-4 STRATEGIC PROGRAM(S): CC - SP1, SP 2, SP 3, SP 4 and SP5

EXPECTED NUMBER OF PROJECTS UNDER THE PROGRAM DURING CURRENT GEF TRUST FUND

REPLENISHMENT PERIOD:

INDICATIVE CALENDAR	
Milestones	Expected Dates
Work Program	November 2008
Submission of last project under the Program	November 2010
Program completion	November 2015

A. INDICATIVE FINANCING PLAN SUMMARY FOR THE PROGRAM(\$)

	Total Program*	Total Project Amount Submitted for Work Program Inclusion**	Agency Fee***
GEF	\$ 46.0 million	\$ 41.85 million	\$ 4.15 million
Co-financing	\$ 100.0 million (targeted)	\$100.00 million (targeted)	
Total	\$ 146.0 million	\$ 141.85 million	\$ 4.15 million

* Indicative maximum program amount for current replenishment period. Annex A provides the list of all potential projects.

** Total project amount submitted for Council approval at the time of program submission.

*** Agency fee relates to the sum of Agency fees for all projects submitted with the PFD for Council approval.

B. INDICATIVE CO-FINANCING FOR THE PROGRAM (\$) (indicative at this stage)

Sources of Co-financing	Name	Type of Co-financing	Amount (millions) (targeted)
Project Government Contribution	National Technical Ministries / Energy Agencies / Electric Utilities	In kind / Cash	20.00
GEF Agency(ies)	-	In Kind / Cash	10.00
Bilateral / Multilateral Aid Agency(ies)	-	Cash	50.00
Private Sector, NGOs and Others	-	Cash	20.00
Total co-financing			100.00

¹ Program ID number will be assigned initially by GEFSEC

C. GEF RESOURCES ANTICIPATED BY FOCAL AREA(S) FOR PROGRAM

Focal Area	Total Amount (\$)²
Climate Change	\$ 46.0 million
TOTAL	\$ 46.0 million

D. PROGRAM APPROVAL PROCEDURE

This framework for the Energy Component of the GEF Strategic Program for West Africa is submitted to Council for its consideration at its November 2008 meeting. In all, and after appropriate consultations, 57 project concepts were submitted by the countries for consideration under the energy component. The program document identifies 26 project concepts that were found suitable to be financed under the program, and presents these concepts along with a project concept (MSP) focusing on knowledge management, capacity building including training and coherence in this work program. The PIFs are not yet ready for presentation as part of the program framework. Once ready, they will be cleared by the CEO and presented in the subsequent work programs. However, the project concepts are attached for information (Annex D).

PART II: PROGRAMMATIC JUSTIFICATION

A. OBJECTIVE OF THE PROGRAM :

Keeping in view the regional and national developmental priorities of countries in West Africa, the main objective of the energy component of this GEF strategic program is to bring about significant global environmental benefits in these countries in the area of climate change, along with a number of local environmental benefits, as well as important developmental benefits. Operationally, the main objective is to use a programmatic approach to ensure greater coherence in the formulation of renewable energy and energy efficiency projects at the national level in these countries, and promote greater synergies in their implementation. In line with the rest of the GEF program for West Africa, the energy component will primarily promote practical and action oriented projects with measurable impacts, and will catalyze private sector investments, strengthen public-private partnerships and stimulate scaling up of renewable energy and energy efficiency markets in the region. The energy component will specifically focus on the energy access agenda and the linked issues of productive and income generation activities besides promoting energy efficiency measures in the industrial, residential and public sectors.

B. RATIONALE OF THE PROGRAM AND DESCRIPTION OF STRATEGIC APPROACH:

The Overall Context

For the energy component under the GEF strategic program, the West Africa region is defined broadly and is considered to include the following countries: Cape Verde, Cote d'Ivoire, Nigeria, Benin, Burkina Faso, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Niger, Senegal, Sierra Leone, Togo and Mauritania. Chad and Burundi requested to join the programme.

The countries in West Africa are well endowed with diverse but unevenly distributed energy resources³. Hydropower potential in the region is estimated to be around 23,000 MW, of which only 16% is being currently exploited. Biomass represents one of the main energy resources in West Africa. According to FAO (2006), total forest coverage in the countries of West Africa is estimated at 69.8 million Hectares. Traditional biomass (e.g., fuel wood and charcoal) contributes more than 80% to the energy balance of many countries in the region. Wind power, especially along coasts and in desert zones where wind speeds are significant, presents a huge potential to meet the growing energy needs of the region. Solar energy is also one of the most promising renewable sources of energy in the region, with the average sunshine potential in West Africa representing, in gross terms, 5 to 6 kWh/m² per day.

² Estimated maximum program amount by the focal area

³ECOWAS/UEMOA: White Paper for a regional policy on access to energy services in support of the millennium development objectives, October 2005/7

Despite West Africa's vast energy resources (both fossil fuels⁴ and renewable sources of energy) when compared with other parts of the continent, the region's energy deprivation or lack of access⁵ to modern energy services is by far the most prevalent. The overall access rate⁶ to modern energy services is very low across the region, thereby inhibiting prospects of developing economic activities (barely 5 to 10% of the population has access to electricity in some countries, with per capita energy consumption remaining among the lowest in the world). Access to modern fuels in rural areas is particularly constrained since national grids are small and being extended only very slowly if at all. Decentralized energy systems are rare, and there are significant barriers to renewable energy development and markets in the region. End use and supply side efficiencies are far lower than global averages because of inefficient usages, and there are significant losses through poor electricity infrastructures. The widespread use of traditional stoves and inefficient lamps illustrates the inefficient use of energy in the household and public sectors. Most modern buildings in cities and towns, both residential and public, are highly energy inefficient, as well as not being environmentally friendly.

At present, there are about 262 million inhabitants in West Africa, comprising 40% of the total population of sub-Saharan Africa. This population is expected to reach 320 million in 2015. Partly as a reflection of the region's energy deprivation, the segment of the population living with less than \$1 a day still represents almost 50% of the total inhabitants of the region. Around 13 countries in region are currently categorized as Least Developed Countries and also Highly Indebted Poor Countries. The majority of these countries also have low levels of human development (i.e. HDIs lower than 0.5), and there are growing income disparities in the region and within individual countries.

The outlook for improvement in the countries of West Africa is still far from promising. Over the past two decades, these countries have experienced limited growth and diversification in their productive sectors, and these trends do not appear to be changing. Indeed, they may get worse. Climate related impacts are seriously affecting most countries in the region as their economies are primarily based on rural and agro-based outputs such as agriculture, fishing and pastoral farming, with limited access to markets. Various studies undertaken recently by multi/bilateral agencies and partners reveal that most countries in the region will not be able to meet the key targets under MDGs by 2015 primarily on account of lack of access to modern energy services.

Table 1 - Comparative Statistics for Countries in West Africa

	Popula- tion2005 (1,000)	% Urban Pop 2005	House- hold Access to Electricity	Primary Energy produc- tion per Capita Kgoe/cap	Final Energy produc- tion per Capita Kgoe/capi- ta	2004 GDP PPP/Pop (\$/hab)	Electricity Consump- tion/Pop- ulation (kWh/cap)	CO2/ Popula- tion (t CO2/cap)	Energy Intensity of GDP Kep/\$95
Benin	8,439	46	22%	183	228	988	45	0.3	0.761
Burkina Faso	13,228	19	5%	191	234	255	36	0.1	0.800
Burundi	7,859	-	-	-	-	319	-	-	-
Cape Verde	507	58	-	49	217	1,183	-	0.3	0.185
Chad	10,146	-	-	-	-	1,368	~15	-	-
Cote d'Ivoire	18,154	46	39%	348	227	1,365	157	0.7	0.512
Gambia	1,517	26	5%	221	221	1,845	121	0.2	0.703
Ghana	22,113	46	35%	280	332	2,183	244	0.3	0.957
Guinée	9,402	37	5%	104	181	2,074	96	0.2	0.385

⁴ Nigeria alone possesses 98% of proven reserves of crude oil, natural gas and coal in the region, or 30% of the Africa's total oil resources, and 31% of Africa's proven natural gas reserves.

⁵The West African region has some of the lowest energy consumption rates in the world, with average electricity consumption of just 88 kWh /capita compared to global average of 2,373 kWh / capita. On average, household access to electricity across the sub-region is about 20% but wide differences exist between the access rates in urban areas, which average 40%, and those in rural areas, which range between 6% and 8%.

⁶Access rate is calculated on the basis of percentage of households having access to electricity.

Guinée-Bissau	1,586	36	5%	62	147	636	74	0.2	1.067
Liberia	3,283	48	?	703	737	884	234	..	3.730
Mali	13,518	34	8%	124	160	814	57	0.1	0.583
Mauritania	2,963	-	-	-	-	1,594	~150	0.9	-
Niger	13,957	23	8%	57	63	696	26	0.1	0.392
Nigeria	131,530	48	20%	1,610	680	956	73	0.3	0.838
Sénégal	11,658	51	32%	159	210	1,575	125	0.4	0.498
Sierra Leone	5,525	40	5%	158	190	604	30	0.1	1.144
Togo	6,145	36	12%	176	160	1,413	208	0.4	1.020

Sources - White paper for a regional policy for increasing access to energy services for populations in rural and peri-urban areas in order to achieve the MDGs, drawn up by ECOWAS and the UEMOA: October 2005, and other sources

In addition, unevenly distributed energy resources, low interstate energy trade, and underdeveloped renewable energy and energy efficiency markets attract minimal or no investments⁷ in the region.

Key Barriers and Challenges

The development of renewable energy (RE) and energy efficiency (EE) markets in the countries of West Africa faces a number of interlinked barriers and challenges, the following being the most significant:

Policy, legal and regulatory frameworks: Notable efforts are being made in many countries in the region to develop ambitious national policies and strategies to promote the dissemination of renewable energy and energy efficiency technologies in the region. However, the main challenge continues to be their operationalisation and implementation. As a result, in countries where they exist, the good policies have nevertheless largely failed to attract the much-needed interest and investments from the private sector. Also, while there has been some interest from the private sector in promoting small and decentralized renewable energy systems, the same cannot be said for large-scale grid connected renewable energy systems (>1 MW). For instance, policy intentions to accommodate renewable energy based power generation, either in stand-alone form or embedded, have not been translated into pragmatic instruments and policy incentives, such as applicable feed-in tariffs, technical specifications for power generation etc., which will encourage potential independent power producers (IPPs). In addition, there are no model power purchase agreements (PPAs) readily available or in place at the national / regional level. With regards to energy efficiency, the business case for the systematic integration of energy efficiency approaches in all sectors, but especially in industry, has not been embraced. With the exception of one or two countries, energy efficiency measures have mainly focused on the promotion of efficient cook stoves at the household level. Although a few initiatives have been launched recently by the EU Energy Initiative's Energy Facility, it is too early to assess the success of these projects in involving the private sector towards concrete energy efficiency measures.

Technology transfer and adaptation: Despite various efforts being made to promote renewable sources of energy and energy efficiency technologies, these have not penetrated or been adapted by the markets in the region as was anticipated. In the past, where technology demonstration projects were not demand driven or based on priority energy needs of the concerned population, these projects could not deliver the required economic, social and institutional benefits. In most cases, the focus was more on a supply push approach driven by donor programmes and focused on delivery of technology at the expense of services delivery. Local manufacturing capacities have remained by and large rudimentary. In the limited cases where there has been some success in local manufacturing or assembling of parts of renewable energy and energy efficient equipment, ensuring acceptable quality has been problematic. In addition, there has been no or limited linkages between research and development initiatives and technology demonstration projects. So far, research and development has tended to focus primarily on prototype development, performance assessment,

⁷At a high level regional meeting on scaling up renewable energy organized by UNIDO jointly with Government of Senegal and GTZ at Dakar in April 2008, participants agreed to setting a common continental target for governments with the support of their development partners to scale up investment in renewable energy from the current level of less than US\$ 1 billion a year to US\$ 10 billion over the next 5 years (2009 – 2014).

and resource assessment and feasibility studies, albeit to a limited extent. There is a lack of coordinated efforts on linking technology demonstration⁸ and research with related aspects like policy, market studies and life-cycle assessment.

Capacity building: Lack of adequate capacities at various levels has been identified as a major constraint in promoting renewable energy and energy efficiency markets in the region. There is a need to build the required human capital in the energy and related sectors/fields through the promotion of specifically designed and targeted training courses at the national and regional levels and knowledge networks in the region. In view of the cross-sectoral character of energy, there is an equally important need to enhance the capacity of non-energy sector decision makers in energy related matters. Governments, regulators and parliaments in the region need capacity to formulate and implement policies, laws and regulations that would create a level playing field for RE and EE technologies. Institutions that are required to support the development of renewable energy and energy efficiency, such as rural electrification agencies, energy regulators, research and development centers, industry support bodies, investment and trade promotion organizations, civil society etc. are either non-existent or lack the capacity to effectively carry out their mandates. Moreover, wherever these institutions exist, their activities are not well coordinated. A critical assessment of current and past capacity levels of the key actors involved in the renewable energy and energy efficiency sectors in countries of West Africa suggests that many of the related capacity development projects have focused on training activities that are not well integrated into actual project development and implementation. A rather narrow set of capacity development tools, mainly seminars and workshops have been employed with little recourse to practical training and exposure to project formulation cycles and procedures.

Awareness raising and advocacy: There is lack of awareness about the potential benefits of developing the renewable energy and energy efficiency markets to effectively address the energy challenges, and subsequently, about their social and economic benefits in the region. At the policy makers' level, lack of awareness about the potential benefits of renewable energy technologies often results in the development of policies that are supportive to conventional energy resources at the expense of renewables, and thereby failing to create a level playing field for renewable energies. For the private sector, lack of awareness results in lost business opportunities in the field of renewable energy and energy efficiency. For manufacturing industry, it results in higher operating costs and less competitiveness. In addition, since the region does not have any standards for renewable energy or energy efficiency technologies and performance labeling for electrical equipment in use, sub-standard equipment, either imported or locally manufactured, is flooding the local markets. The lack of proper standards also means that the national / local markets for energy efficient consumer products or products that operate with renewable energy are not supported by labeling schemes to inform end-users of the performance of different equipment or devices.

Financing and investments: As is the case in other regions of Africa, investments in renewable energy systems and energy efficiency measures have been very meager in the countries of West Africa. Mostly it has been donor driven and fragmented without any coordinated approach. Although RE projects in particular require high upfront capital, and have long payback periods, there are very few or no targeted credit or financial facilities that would promote these systems in West Africa. In fact, the conventional financial services sector, commercial banks in particular, have continued to shun projects in the RE and EE sectors due to perceived market uncertainties and higher risks. Higher transaction costs, especially in the case of small renewables energy systems, uncertainties of the resource base, and the lack of off-takers for power sector projects further compound the problem. Project developers continue to face serious challenges in securing favorable financing services to develop and implement embedded generation projects as they lack the necessary skills in financial analysis of RE and EE related investments to prepare financing packages that respond to the requirements of financial institutions. Their difficulties are compounded by the fact that most of them lack the necessary expertise to carry out such projects in terms of management capacities. Lack of financial service providers to support a wide range of innovative financing products (guarantee funds, micro credits, etc.) suitable for the development of commercially viable energy projects at informal, small, medium and large-scale level further constrain dissemination of renewable energy and energy efficiency systems.

Sub-regional commitment for collaborative action

In order to take a strategic approach for ensuring synergies with completed and ongoing renewable energy and energy efficiency projects, a review was performed of the status of all completed / ongoing energy projects at the regional /

⁸ South-south and north-south cooperation frameworks could be strategically employed to support transfer of appropriate and affordable RE / EE technologies, and their acquisition, absorption and ownership based on identified energy needs at the local level.

national level that are being supported in the countries of West Africa by GEF and multi/bilateral and national agencies. A number of important and significant energy projects and programmes, that have been completed or are still ongoing, were identified that might have bearing on the energy component of the GEF program for West Africa. These projects include, among others, the following: Common Policy of the Monetary Union of West African States (UEMOA) and the project SIE-Africa; the West African Power Pool, Electric and Gas interconnections; Regional Micro/Mini-Hydropower Capacity Development and Investment in Rural Electricity Access in Sub-Saharan Africa (GEF/UNDP); the Electricity Sector Efficiency Improvement and Rural Energy Projects in Guinea (GEF/World Bank); Rural Electrification and Renewable Energy Development in Nigeria (GEF/World Bank); World Bank financed energy projects under the NEPAD infrastructure short term action plan; GVEP Programme; Regional Capacity-building Project for Improving Greenhouse Gas Inventories (GEF/UNDP); Enabling Activity Projects for the Preparation of Initial Communication Related to the UNFCCC (GEF-UNDP/UNEP), Energy Access Capacity Development Facility (proposed by UNDP/UNEP), Small Hydropower Development in Sierra Leone, Mali, Ghana and Nigeria (UNIDO) and Lighting up Rural Africa Programme (UNIDO).

It was recognized that although there were a number of regional energy initiatives promoting regional cooperation in addressing the region's energy challenges such as the West African Power Pool (WAPP) and the West African Gas Pipeline (WAGP), the energy agenda is still fragmented and scattered in countries of West Africa. In order to move towards a more coherent and integrated energy markets in the region, a programmatic approach as proposed by GEF would greatly facilitate in scaling up of renewable energy and energy efficiency markets in the region.

The energy component will build on the experiences gained, emerging positive trends and the best practices in the completed energy projects, and will strive to develop synergies (and also avoid overlap or duplication) with ongoing/planned energy projects in the region by consolidating efforts that will put emphasis on promoting coherence and synergies. With respect to the support program's objective of increasing regional synergies and coordination, it is of interest to note that West Africa is a region with relatively well-structured regional integration prospects. Most of the countries that make up the region are members of the Economic Community of West African States (ECOWAS) and a number of them are also members of the West African Economic and Monetary Union (UEMOA), both of which are very relevant mechanisms when seen in the context of their potential to promote coherence and cooperation in the field of energy policy planning for overall economic development of the region.

Overview of GEF Strategic Program: Energy Component

The energy component of the GEF strategic program in West Africa will conform to the priorities listed under the Climate Change Focal Area Strategy and Strategic Programming for GEF-4, namely Strategic Program 1: Promoting Energy Efficiency in Residential and Commercial Buildings; Strategic Program 2: Promoting Energy Efficiency in the Industrial Sector; Strategic Program 3: Promoting Market Approaches for Renewable Energy; Strategic Program 4: Promoting Sustainable Energy Production from Biomass, and Strategic Program 5: Promoting Sustainable innovative Systems for Urban Transport.

The energy component is in line with the programmatic approach that was adopted by the GEF Council in April 2008 (DOC/C.33/6, March 21, 2008). This approach is a viable and attractive tool for allocating GEF resources in a more strategic and results-oriented manner. The implementation of the program's energy component in West Africa will also be a unique opportunity to formulate practical and concrete energy projects at the country level. The programmatic process will help improve GEF's strategic support and improve the countries ownership of their portfolio.

Aim of the Energy Component of the GEF Strategic Program

The energy component of the GEF strategic program has been designed through a participatory process to scale up access of communities to modern energy services based on renewable energy, and introduce energy efficient technologies and measures in industrial, residential and public sectors.

The main aim of the energy component is to assist countries in the West Africa region to optimize the utilization of resources made available to them under the GEF Resource allocation Framework (RAF) with the view to enhancing the implementation of their energy and climate change policies and programmes.

The energy component takes a holistic view of the energy sector in the countries of West Africa through a programmatic approach to enhance implementation of selected energy projects in a more coherent and effective manner, and

promotes regional and national level practical and concrete interventions. The ultimate aim is to enable countries in the region to meet their energy and development challenges effectively.

Strategic Focus

The proposed energy component of the GEF strategic program specifically focuses on practical interventions on the ground that will demonstrate the technical and economic viability of promising renewable energy and efficient energy technologies and measures, and promote private sector involvement in stimulating energy markets in the region. The program, which has been developed through a participatory, consultative, demand driven process, aims at mainstreaming renewable energy and energy efficiency policies and measures into regional cooperation frameworks and national developmental plans to ensure their wide scale adoption and replication in the region.

Keeping in line with the regional and national priorities as well as with the GEF strategic priorities on climate change, concepts have been identified for development into action oriented and practical projects to be implemented at the regional / national level. Specifically, the projects will focus on the following areas:

Renewable Energy

- Setting up mini-grids based on mini hydro, solar, wind and biomass sources of energy to augment rural electrification;
- Promoting fuel substitution for charcoal and efficiency in fuel wood used in urban and rural areas;
- Promoting productive activities, such as agro-based industries and multifunctional platforms, based on renewable energy systems;
- Promoting industrial applications of renewable energy technologies (i.e., process heat and cooling applications etc. across industries / enterprises wherever the potential exists);
- Promoting local enterprises (SME development) based on reliable energy services provided by renewable energy systems;
- Promoting, wherever found feasible, biofuels and bioenergy technologies such as biomass gasification and biogas from industrial residues / municipal wastes / household wastes, for mini-grids, process heat and cooking applications;
- Promoting public awareness on effectiveness of Renewable Energy Technologies in meeting rising demand for energy; and
- Providing support to the development of renewable energy policies, marketing, manufacturing capacities and maintenance services.

Energy Efficiency

- Promoting energy efficient stoves in households, institutions, and small and medium scale enterprises (SMEs);
- Initiating and scaling up efforts to promote energy efficient lamps and light bulbs in the residential and commercial sectors;
- Promoting solar water heaters in residential and public buildings, hotels, hospitals and SMEs;
- Introducing energy efficient technologies and measures in industry, for reducing energy consumption and improving productivity and competitiveness;
- Promoting untapped cogeneration potential in industry and agro-based (i.e. residues from rice and sugar mills etc.) enterprises;
- Promoting public awareness, standards and certification of equipment, and strengthening energy efficiency centres; and
- Providing support to the development of energy efficient policies, markets, manufacturing capacities and maintenance services.

Sustainable Urban Transport

- Promoting sustainable innovative systems for urban transport; and
- Promoting planning and model shift to less GHG intensive transport modes.

Strategic Components

Based on the consultations and feedback received from the countries in the region, from the GEF Agencies and from key stakeholders that attended program validation meeting in Cotonou, Benin, from 24 to 26 August 2008, four strategic components were identified:

- Promoting renewable energy for enhancing energy access and supporting productive capacities;
- Promoting sustainable energy production from biomass;
- Promoting energy efficiency in residential and commercial buildings, and the industrial sectors; and
- Promoting sustainable innovative systems for urban transport

Initially, 57 climate change related project concepts / ideas were received from 18 countries. Within the three broad categories given above – renewable energy, energy efficiency and urban transport systems – the concepts could be grouped into eight focus areas, namely Solar Energy (including PV and Solar Thermal Applications); Small Hydro Power Development; Mini-grids using different renewable energy technologies; Energy Efficiency in the Industrial and the Construction Sectors; Energy Efficiency at the household level (e.g. efficient cook stoves, efficient lighting); Biogas and Bioenergy at the household level; Biofuels / Fuel Substitution and Land use; Energy Policy, Marketing and Capacity Building, and Urban Transport Sector. In all, 26 project concepts have been finally selected keeping in view the priorities of countries as well as GEF strategic components identified under the energy component to ensure coherence and synergies at the regional and national levels. In addition, a project concept (MSP) has also been developed to ensure knowledge management, capacity building including training, coherence and coordination under the energy component.

Table 2: List of Concepts submitted by Countries

	Focus Areas	No. of Projects	Countries
1	Solar Energy (including PV and Solar Thermal Applications)	7	Benin, Cote d'Ivoire, Ghana, Mali, Senegal, Sierra Leone
2	Small Hydro Power Development	4	Burundi, Guinea, Liberia, Sierra Leone
3	Mini-grids using different Renewable Energy Technologies	13	Benin, Chad, Cote d'Ivoire, Gambia, Ghana, Guinea, Mauritania, Nigeria, Togo
4	Energy Efficiency in the Industry and the Construction Sector	6	Benin, Ghana, Mali, Senegal
5	Energy Efficiency at household level (e.g. efficient cook stoves, efficient lighting)	6	Burkina Faso, Cote d'Ivoire, Ghana, Liberia, Mauritania
6	Biogas and Biomass at household level	6	Gambia, Ghana, Guinea, Mali, Mauritania, Senegal
7	Biofuels / Fuel Substitution and Land use	6	Benin, Burkina Faso, Gambia, Mali, Mauritania, Sierra Leone
8	Energy Policy, Marketing and capacity building support, and urban transport sector	9	Cote d'Ivoire, Ghana, Guinea, Mali, Mauritania, Niger, Nigeria
	Total Number of Project Concepts	57	18 Countries

Table 3: List of Selected Projects and Funding (Focus Area wise)			
Focus Area	No. of Projects	GEF Funding (\$ Million)	Countries
Promotion of renewable energy technologies for modern energy services	4	6.0	Cape Verde, Guinea, Guinea Bissau, Niger
Mini-grids based on renewable energy for rural electrification	8	14.0	Chad, Cote d'Ivoire, The Gambia, Guinea, Guinea, Guinea Bissau, Liberia, Nigeria, Sierra Leone
Bioenergy – production and use of Jatropha oil, and promoting biogas systems	3	3.0	Burkina Faso, Mali
Energy efficient lighting in public and residential sectors	6	10.0	Burundi, Côte d'Ivoire, Mauritania, Nigeria, Togo
Promoting energy efficiency in industry, refrigeration appliances and sustainable urban transport	5	12.3	Benin, Burkina Faso, Ghana, Nigeria, Senegal
Knowledge management, capacity building including training, coherence and coordination	1	0.7	Overall Program Coherence and Knowledge Management
Total Number of Selected Projects	27	46.0	18 Countries

C. DISCUSS THE VALUE-ADDED OF THE PROGRAM VIS-À-VIS A PROJECT APPROACH (including cost-effectiveness):

A programmatic approach has multiple benefits and added value at the sub-regional level rather than a fragmented project by project approach for promoting access agenda and energy efficiencies in countries of West Africa.

At the project formulation stage, and depending on level of capacities in project development already existing in implementing national and sub-regional institutions, a programmatic approach provides project developers at the national level to learn from each other on the best ways to design and formulate projects. This is particularly relevant in countries of West Africa where technical capacities are quite limited. A programmatic approach also provides for better cohesion and convergence in the approaches taken and strategies adopted in national projects. Among other things, this allows for the design of national projects that are more conducive to taking advantage of synergies at the project implementation stage.

At the project implementation stage, a programmatic approach provides for many benefits vis-à-vis the purely project approach. In the first place, while such an approach allows for targeted individual projects at the country level, it also provides a multiplying factor for information flow, capacity building, knowledge management and replication across countries. In this way, greater overall impact will be achieved and there will be a more cost-effective use of the GEF and other resources made available to the projects: economies of scale can be achieved and the cost-effectiveness of certain activities such as capacity building and institutional strengthening needs can be improved as the resources necessary for this can be pooled across countries of the sub-region. Such convergence of resources is very beneficial to the countries of West Africa that are among poorest of the world. A programmatic

approach also provides for improved possibilities for donor co-ordination, opportunities for pooling resources, and renewed focus on sub-regional priority interventions – a key benefit compared with the current situation of fragmented energy agenda coupled with multiple parallel initiatives by donors and insufficient coordination. Besides, a programmatic approach provides increased leverage for donor commitments and private sector contributions and guarantees a stable, phased and most importantly predictable resource flow that supports longer-term planning and consistency in implementation of concrete energy projects with measurable impacts. Finally, a programmatic approach naturally creates the grounds for putting in place, where deemed useful, regional mechanisms that can lead, after the individual projects are completed, to sustained coordination and technical interaction between the respective national authorities and existing regional agencies.

D. DESCRIBE THE POTENTIAL GLOBAL ENVIRONMENTAL BENEFITS DELIVERED BY THE PROGRAM:

Business as usual: With a multitude of donor driven initiatives and fragmented energy agenda, continued business as usual would most likely widen the gap between demand and supply of energy services in the region. It would also limit regional and international dialogue, policy resolutions and national commitments vis-à-vis actual results and progress on the ground. Sub-regional initiatives and national level projects would compete for limited funding sources available in an environment of financial unpredictability, thereby undermining long-term strategic planning. A broader framework to ensure coordination between countries, sub-regional organizations, and donors with view to strategic priority setting for increased investments in the energy sector of countries in West Africa would be missing. As a result a piecemeal project-by-project approach with high transaction cost would be implemented achieving limited impact on access agenda. The net effect would be that less of the potential global benefits would be captured than could be the case.

Global Environmental Benefits: In contrast, an integrated programmatic approach as promoted by GEF would accelerate progress in the access agenda and in energy efficiencies in countries of West Africa, and would deliver significantly more global environmental benefits across GEF focal areas. These global environmental benefits would be delivered primarily in terms of reduced GHG emissions due to enhanced use of renewable energies for rural electrification, improved energy efficiencies in industrial, residential and public sectors, and sustainable urban transport systems.

Regional, National and Local Benefits: In terms of expected local benefits, the energy component under the proposed strategic program, by helping to augment rural electrification, enhance energy supplies based on renewable energy and promote end use and supply efficiencies in industrial, residential and public sectors in the region, will have strong developmental benefits by catalyzing the creation of new productive uses, enhancing job opportunities, improving social and economic activities, and facilitating the creation of markets and scaling up of RE and EE technologies and services in the region.

Knowledge Management Benefits: In addition to global, regional and national benefits, there will be knowledge management benefits. These will include, among other things, the collation and wide dissemination of best practices, information and experience, and policy development functions. At the policy level, this will allow for more informed decision making by policy makers and for more effective implementation of the energy policies / programmes; at other levels, it will ensure a greater level of understanding and skills. All this is necessary to ensure that the efforts of national governments, donor partners and private sector are synergized to achieve the targeted objectives. For GEF, this will ensure more effective implementation and greater replication of not just the country level individual projects but of GEF's programmatic effort. Economic Community of West African States (ECOWAS) and Monetary Union of West African States (UEMOA) stand to gain from the knowledge management accrued from this programme as it will consolidate the ongoing efforts.

E. DESCRIBE THE CONSISTENCY OF THE PROGRAM WITH NATIONAL/REGIONAL PRIORITIES/PLANS (country ownership and drivenness, project selection criteria if applicable) :

The energy component is in line with regional energy priorities and plans of both ECOWAS and UEMOA. Its squarely fits in initiatives launched by ECOWAS and UEMOA especially the White paper for a Regional Policy on Energy Access in support of the millennium development objectives (January 2006). The White Paper, which was

endorsed by 29th Summit of the ECOWAS Heads of States and Government, among others, recognizes the need to develop available renewable energy resources to increase access to energy in support of efforts to achieve MDGs.

The energy component is also in conformity with priorities identified in the action plan for the environment initiative and the energy plan of the New Partnership for Africa's Development (NEPAD). The energy component also takes into consideration the key strategic concerns and outcomes of the Dakar International Conference on Renewable Energy in Africa and its Action Plan.

The strong participatory process that has been used to develop the program has ensured, and will continue to ensure that the overall programme as well as the individual projects are consistent and in line with national priorities.

F. DESCRIBE THE CONSISTENCY OF THE PROGRAM WITH GEF STRATEGIES AND STRATEGIC PROGRAMS:

The energy component responds directly to the objectives of the GEF Strategic Program developed for countries of West Africa, and aimed to achieve objectives related to access and energy efficiency agenda under the climate change focal area.

All strategic components listed under the energy component conform to the priorities listed under the Climate Change Focal Area Strategy and Strategic Programming for GEF-4, namely Strategic Program 1: Promoting Energy Efficiency in Residential and Commercial Buildings; Strategic Program 2: Promoting Energy Efficiency in the Industrial Sector; Strategic Program 3: Promoting Market Approaches for Renewable Energy; Strategic Program 4: Promoting Sustainable Energy Production from Biomass, and Strategic Program 5: Promoting Sustainable innovative Systems for Urban Transport.

G. OUTLINE THE INSTITUTIONAL STRUCTURE OF THE PROGRAM INCL. COORDINATION AND MONITORING & EVALUATION:

Keeping in view the commitment and ownership shown by the countries of West Africa in approving the practical and concrete projects during the validation meeting, it is important to have a lean but effective organizational mechanism in place to coordinate and monitor the overall progress of the energy component of GEF's Strategic Program for West Africa (GEF-SPWA). Also, given the energy challenges being faced by the countries of West Africa, a high level of cooperation and coordination will be required among all key stakeholders if the program's energy projects are to deliver coherent and targeted assistance for promoting the access agenda and energy efficiencies in the region.

At the program level, an institutional structure including a coordination mechanism and a mechanism for monitoring and evaluation at the program / component level will be put in place (more details have been given in the cover note on GEF-SPWA) including setting up of a Steering Committee to provide strategic and tactical guidance to the program. At the component level, UNIDO as the lead agency will play a facilitating role in overall coordination and monitoring and evaluation of the energy portfolio approved under the program. Under a MSP targeted specifically at providing knowledge management, capacity building including training, coherence and coordination, a focused monitoring and evaluation work plan will be developed by UNIDO for the energy component. This would facilitate in the collation and analysis of the information received from the countries and the GEF Agencies at the component level. It will not duplicate the ongoing efforts of the other agencies. Instead, it will complement country level reports, and prepare a progress report on the performance of the programmatic approach within the energy component that will be sent to the GEF Secretariat once a year. UNIDO will also assist the GEF Secretariat in the organization of meetings of the Steering Committee for GEF SPWA (back to back with the GEF constituency meetings).

H. INDICATE RISKS, INCLUDING CLIMATE CHANGE RISKS, THAT MIGHT PREVENT THE PROGRAM OBJECTIVE(S) FROM BEING ACHIEVED, AND IF POSSIBLE INCLUDING MITIGATION MEASURES THAT WILL BE TAKEN:

The experiences gained by various GEF Agencies from the implementation of renewable energy and energy efficiency projects, and the consultations held with policy makers, experts, partners and agencies working in the

energy sector in West Africa, have provided practical insights into the potential risks to the project, and the adequate steps that need to be taken to address or minimize some of these:

- *Absence of co-financing:* Absence of adequate co-financing for energy projects was cited as a very high risk that may constrain timely start of energy projects that have been identified by countries and agencies under the energy component. In the past, many regional projects could not take off because of inability of agencies or countries to mobilize adequate co-financing. To minimize this risk, intensive discussions are being held with interested donors, national agencies, financial institutions and the private sector to seek their ownership and commitment to the energy projects selected under this strategic program.
- *Weak coordination among departments, agencies and donors:* The energy agenda is fragmented among departments and agencies in the region. The interests of these different agencies and departments do not always coincide, and conflicts or lack of impetus to provide data or other resources necessary to carry out the fieldwork could delay progress or even completely prevent certain tasks. There is also weak coordination between donors and UN / Multilateral Agencies working in the energy sector. To mitigate these and other related risks, better coordination will be ensured to facilitate effective project implementation at the national level, and program implementation at the regional level.
- *Lack of technical and management capacity:* Lack of capacity to technically support the project formulation, and implementation can seriously hamper the timely completion and successful operationalization of energy projects funded under this program. Moreover, a failure to achieve the required technical standards could jeopardize the co-funding itself. To mitigate this risk, special efforts will be made to build local capacities, on both the technical and the managerial fronts, in the energy and related sectors/fields through the promotion of specifically designed and targeted training courses and the creation of knowledge networks in the region.
- *Limited markets opportunities:* Inadequacies of markets and lack of incentives for active involvement of the private enterprises in the power sector have severely jeopardized the scaling up of renewable energy for augmenting the access agenda in the region. The key to implementation of a large number of concrete projects will depend on the active involvement of the private sector in the program. Special efforts will be made to promote IPPs to get involved in specific projects, so that markets for renewable energy and energy efficiency technologies get developed in the region.
- *Lower level of awareness:* There is limited awareness about the potential benefits of developing the renewable energy and energy efficiency technologies to effectively address the energy challenges, and subsequently, about their social and economic benefits in the region. If this is not corrected, there will be lack of buy-in to the projects. Concerted steps will be initiated to sensitize policy makers, experts and communities on the benefits of enhanced access to reliable energy services based on renewable energy and energy efficiencies in industrial, residential and public sectors.

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

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

Endorsement by the Ministers / the GEF Focal Points from 18 countries is enclosed in the cover note for the GEF Strategic Program for West Africa.

B. LEAD GEF AGENCY CERTIFICATION

This request has been prepared in accordance with GEF policies and procedures, meets the GEF criteria for project identification and preparation, and has been validated by participating GEF Agencies.	
Mr. Dmitri Piskounov Managing Director Programme Development and Technical Cooperation Division UNIDO GEF Focal Point	Mr. Pradeep Monga Chief and Deputy to the Director Renewable and Rural Energy Unit, Energy and Climate Change Branch PTC Division, UNIDO Project Contact Person
Date: September 12, 2008	Tel. and Email: +43-1-26026-3018, P.Monga@unido.org

Annex A. List of Energy Project Concepts included under the Program Framework

Projects Concepts / PIFs Submitted for Council approval in this work program*:											
<u>Strategic Focus / Project Concepts</u>	<u>Country</u>	<u>GEF Agency</u>	<u>GEF Amount (\$ '000,000)</u>								<u>Expected Submission Date</u>
			<u>CC Focal Area</u>		<u>BD Focal Area</u>		<u>Sub-Total</u>		<u>Agency Fee</u>	<u>Grand Total</u>	
			<u>Project</u>	<u>PPG</u>	<u>Project</u>	<u>PPG</u>	<u>Project</u>	<u>PPG</u>	included in the Grand Total		
Strategic Focus: Promotion of Renewable Energy Technologies for Modern Energy Services											
Project Concepts			-	-	-	-		-			Same as program framework document
Promoting renewable energy and energy efficiency on the Brava Island	Cape Verde	UNIDO	2.000				2.000			2.000	
Promotion of renewable energy technologies (solar, wind, bioenergy) for electrification and energy services	Guinea	UNEP	1.000				1.000			1.000	
Promotion of renewable energy technologies (solar, wind, etc.) for productive uses	Guinea-Bissau	UNEP	1.000				1.000			1.000	
National Reference Programme of Access to Modern Energy Services with Low Carbon Emissions (Programme PRASE)	Niger	UNDP	2.000				2.000			2.000	
Total Sub-components (4 projects concepts)			6.000				6.000			6.000	

Strategic Focus: Mini-grids based on Renewable Energy for Rural Electrification

Project Concepts			-	-	-	-		-		
Promotion of Renewable Energy based mini-grids for rural electrification and productive uses in Chad	Chad	UNIDO	2.000				2.000			2.000
Pilot electrification project of communities through mini-grids based on RE / photovoltaic system	Cote d'Ivoire	UNIDO	1.000				1.000			1.000
Promoting renewable energy based mini grids for productive uses in rural areas in The Gambia	The Gambia	UNIDO	2.000				2.000			2.000
Installation of multi-purpose mini-hydro power systems (for provision of energy, irrigation, etc.)	Guinea	UNIDO	1.000				1.000			1.000
Promotion of renewable energy technologies based mini-grids (small hydro / biomass, etc.) for rural electrification	Guinea-Bissau	UNEP	1.000				1.000			1.000
Installation of multi purpose min-hydro infrastructure (energy, irrigation, etc.)	Liberia	UNIDO	2.000				2.000			2.000
Mini-grids based on Renewable Energy (hydro, solar and biomass) sources to augment rural electrification	Nigeria	UNIDO	3.000				3.000			3.000
Promoting mini grids based on Small Hydropower	Sierra Leone	UNIDO	2.000				2.000			2.000

Total Sub-components (8 project concepts)			14.000				14.000			14.000
Strategic Component: Bioenergy - Production and Use of Jatropha Oil, and Promoting Biogas Systems										
Project Concepts			-	-	-	-		-		
Promotion of Jatropha Curcas as a resource of Bioenergy in Burkina Faso	Burkina Faso	UNDP	1.000				1.000			1.000
Bioenergy Utilisation (electrification and energy services etc. project)	Mali	UNEP/ African Development Bank	1.000				1.000			1.000
Promotion of the use of agrofuels from the production and use of Jatropha oil in Mali	Mali	UNDP	1.000				1.000			1.000
Total Sub-components (3 project concepts)			3.000				3.000			3.000
Strategic Focus: Energy Efficient Lighting in Public and Residential Sectors										
Project Concepts			-	-	-	-		-		
Energy Efficient Lightning Project in Burundi	Burundi	World Bank	2.000				2.000			2.000
Promotion of energy efficiency in public lighting programme	Cote d'Ivoire	UNEP	1.000				1.000			1.000
Mauritania CFL Deployment Program	Mauritania	World Bank	1.000				1.000			1.000
Promotion of energy efficiency in public lighting	Mauritania	UNEP	1.000				1.000			1.000
Promoting Energy Efficiency in Residential and Public Sector	Nigeria	UNDP	3.000				3.000			3.000
Togo - Efficient Lighting Program	Togo	World Bank	2.000				2.000			2.000

Total Sub-components (6 project concepts)			10.000				10.000			10.000
Strategic Focus: Promoting Energy Efficiency in Industry, Refrigeration Appliances and Sustainable Urban Transport										
Project Concepts			-	-	-	-		-		
Energy Efficiency Program in Benin	Benin	World Bank	2.000				2.000			2.000
Ouagadougou Transport Modal Shift in Burkina Faso	Burkina Faso	World Bank	1.000				1.000			1.000
Promoting of Appliance Energy Efficiency and Transformation of the Refrigerating Appliances Market in Ghana	Ghana	UNDP	2.000				2.000			2.000
Nigeria Urban Transport Project	Nigeria	World Bank	5.300				5.300			5.300
PROGEDE II – Eco-village	Senegal	World Bank	2.000				2.000			2.000
Total Sub-components (5 project concepts)			12.300				12.300			12.300
MSP on knowledge management, capacity building including training, coherence and coordination	Sub-regional	UNIDO	0.70				0.70			0.70
Total	-	-	46.00				46.00			46.00

Strategic Focus

	Total GEF	No Projects
Promotion of Renewable Energy Technologies for Modern Energy Services	6.000	4
Mini-grids based on Renewable Energy for Rural Electrification	14.000	8
Bioenergy - Production and Use of Jatropha Oil, and Promoting Biogas Systems	3.000	3
Energy Efficient Lighting in Public and Residential Sectors	10.000	6
Promoting Energy Efficiency in Industry, Refrigeration Appliances and Sustainable Urban Transport	12.300	5
Knowledge management, capacity building, coherence and coordination	0.70	1
Total	46.00	27

ANNEX B

DESCRIPTION OF PROGRAM OBJECTIVES, OUTCOMES AND OUTPUTS

Program Objectives:

The main objective of the energy component under the GEF Support Program for West Africa is to promote an integrated, programmatic approach for ensuring coherence in the formulation of renewable energy and energy efficiency projects at the national level in countries of West Africa and synergies in their implementation. The energy component will primarily promote practical and action oriented projects, and catalyze private sector investments and partnerships to stimulate renewable energy and energy efficiency markets in the region. The energy component will specifically promote the access agenda and the linked issues of productive and income generation activities, besides bringing about significant local and global environmental benefits in countries of West Africa.

The energy component will also promote long lasting solutions such as educating the public through awareness campaigns on Renewable Energy Technologies (RETs) and Energy Efficiency (EE) and dissemination of information through technology parks, centers and workshops.

Program Structure:

This energy component under the GEF Support Program for West Africa is structured around the following four inter-related components:

- Promoting renewable energy for enhancing access and supporting productive capacities;
- Promoting sustainable energy production from biomass;
- Promoting energy efficiency in residential and commercial buildings and in the industrial sector; and
- Promoting sustainable innovative systems for urban transport

These four components were the result of West Africa's regional / country-level priorities as well as of the project concepts received from the countries. In all, 57 project concepts were received from the participating countries, 78% of which were focused on renewable energy and 22% on energy efficiency. Out of 57, 26 projects along with 1 MSP for knowledge management, capacity building including training, coherence and coordination were finally selected that met the criteria and strategic focus set under the energy component.

In order to ensure cohesiveness amongst the components, the energy component will strategically focus at three levels. At the first level, in order to show measurable impacts, it will focus on ensuring the formulation of concrete and practical projects on the ground that will demonstrate the techno-economic viability of renewable energy systems for power generation, and the benefits of using energy efficiently, especially by industry and public sectors. At the second, policy level, steps will be taken to mainstream the access agenda and end use efficiencies into national and regional policy and strategy frameworks. The new policy signals so generated will help drive the energy markets towards the scaling up of renewable energy and energy efficiency systems in the region. At the third level, the energy component will focus on creating robust public-private partnerships for the provision of technology solutions and building the necessary institutional infrastructure and supply chain for support services and creation of markets.

All three levels are interlinked. Without the correct policy signals, markets in renewable energy technologies and energy efficiency services will be slow to develop. However, even with the correct policy signals, markets will not develop without the necessary capacity-building and the creation of required public-private partnerships. Markets will not develop, however, even with the right policy signals and the necessary skills and partnership development if the end users are not convinced of the viability of renewable energy technologies and energy efficiency practices. Thus these technologies and these practices must be demonstrated and the results of these demonstrations widely disseminated.

Program Outcomes and Outputs:

1. Strategic Component: Promoting renewable energy for enhancing access and supporting productive capacities:

This component will focus on projects that promote the energy access agenda based on renewable energy, where strong links will be created between the availability of energy and the opportunities for productive and income generating uses. The stress on links with income generating uses is to ensure the financial sustainability of these projects by creating a stream of income that can pay for the energy services. Another important element of sustainability that will be part of this component is the promotion of markets and the strengthening of capacities for manufacturing RE technologies. This will be critical in ensuring continuity and dissemination.

Outcomes:

- a) Enhanced access of rural and semi-urban communities to modern energy services based on renewable energy;
- b) Growth in markets and manufacturing capacities for renewable energy based power generation;
- c) Growth in agro-industries, industrial centres and employment opportunities

Outputs:

- Techno, social and economic viability of renewable energy (RE) based mini-grids / power systems demonstrated
- Capacities enhanced of national utilities, authorities, experts, officials and agencies to operate and maintain RE based mini-grids / power systems
- RE policies and incentives promoting mini-grids mainstreamed into national energy and developmental plans
- Capacities strengthened of industries and agencies involved in the manufacturing, assembly, and service of renewable energy technologies
- Industrial growth centres developed in and around RE based energy services and mini-grids
- Concrete productive / income generation capacities created around industrial growth centres

2. Strategic Component: Promoting sustainable energy production from biomass

This component will focus on projects that specifically promote sustainability practices in biomass production and use, and introduce modern and nearly commercial biomass technologies such as biomass gasification for power generation, process heat applications and reliable energy services based on agro-residues in the region.

Outcomes:

- a) Enhanced adoption of modern and sustainable measures and practices in biomass production, conversion and use for modern energy services
- b) Growth in sustainable production and use of biofuels
- c) Growth in new and innovative biomass energy technologies for productive and industrial applications

Outputs:

- Sustainability indicators developed for biomass production and use
- Techno-economic viability demonstrated for sustainable biofuels and modern biomass technologies for power generation and productive capacities
- Capacities strengthened of industries involved in the manufacturing, assembly, and service of modern biomass energy technologies
- Sustainable biomass benchmarks developed for production and use

3. Strategic Component: Promoting energy efficiency in residential and commercial buildings and in the industrial sector

This component will focus on projects that promote end use and supply side efficiencies in the industrial sector, households, public and commercial buildings. This component will specifically focus on introducing energy efficiency practices in small and medium

enterprises through a systems optimization approach, and in the process will enhance their competitiveness and productivity. The component will also promote markets in the offering of energy efficiency related services. This will be critical in ensuring continuity and dissemination.

Outcomes:

- a) Increased market penetration of energy efficient technologies and practices in the residential and commercial buildings
- b) Enhanced adoption and deployment of energy efficient technologies and practices in the industrial sector

Outputs:

- Capacities enhanced of national authorities on developing energy efficiency management standards / codes for industry and buildings, and implement compliance procedures
- Techno-economic viability demonstrated for energy efficiency technologies and practices in residential and commercial buildings
- Systems optimization approach introduced on energy efficiencies in selected industries
- Specific training courses conducted on energy efficiency conducted for national officials, architects/design professionals, building material suppliers, builders/contractors/ developers
- Information disseminated and awareness raised on life cycle cost-benefit and return on investments for energy efficiency compliance
- Monitoring and evaluation benchmarks developed
- Financing schemes designed with commercial banks for entrepreneurs to comply with national energy efficiency standards and systems

4. Strategic Component: Promoting sustainable innovative systems for urban transport

This component will focus on projects that promote planning and innovative solutions in urban transport systems, and create markets for low carbon emitting transport modes.

Outcomes:

- a) Innovative transport systems promoted and plans adopted; and
- b) Enhanced use of low carbon emitting transport modes by urban communities

Outputs:

- Sustainable transport policies, rules and measures adopted
- Benefits of low carbon emitting transport systems and planning demonstrated
- Financing schemes / incentives developed to popularize low carbon emitting transport systems

ANNEX C

PROGRAM RESULTS FRAMEWORK

Program Goals Agreed by Countries:								
<p>The key objective of the energy component under the GEF Strategic Program is to enhance access of communities to modern energy services based on renewable energy, and introduce energy efficient technologies and measures in industrial, households and public sectors in countries of West Africa. The ultimate aim is to enable the countries in the region to meet their energy and development challenges effectively.</p>								
Program Components	Type	Expected Outcomes	Expected Outputs	Indicative GEF Financing**		Indicative Co-financing**		Total (\$)
				(\$)	%	(\$)	%	
1. Promoting renewable energy for enhancing access and supporting productive capacities	TA / Inv	<p>1. Enhanced access of rural and semi-urban communities to modern energy services based on renewable energy</p> <p>2. Growth in markets and manufacturing capacities for renewable energy based power generation</p> <p>3. Growth in agro-industries, industrial growth centres and employment opportunities</p>	<p>- Techno, social and economic viability of renewable energy (RE) based mini-grids / power systems demonstrated</p> <p>- Capacities enhanced of national utilities, authorities, experts, officials and agencies to operate and maintain RE based mini-grids / power systems</p> <p>- RE policies and incentives promoting mini-grids mainstreamed into national energy and developmental plans</p> <p>- Capacities strengthened of industries and agencies involved in the manufacturing, assembly, and service of renewable energy technologies</p> <p>- Industrial growth centres developed in and around RE based energy services and mini-grids</p> <p>- Concrete productive / income generation capacities created around industrial growth centres</p>					

<p>2. Promoting sustainable energy production from biomass</p>	<p>TA / Inv</p>	<p>1. Enhanced adoption of modern and sustainable measures and practices in biomass production, conversion and use for modern energy services</p> <p>2. Growth in sustainable production and use of biofuels</p> <p>3. Growth in new and innovative biomass energy technologies for productive and industrial applications</p>	<ul style="list-style-type: none"> - Sustainability indicators developed for biomass production and use - Techno-economic viability demonstrated for sustainable biofuels and modern biomass technologies for power generation and productive capacities - Capacities strengthened of industries involved in the manufacturing, assembly, and service of modern biomass energy technologies - Sustainable biomass benchmarks developed for production and use 					
<p>3. Promoting energy efficiency in the residential and commercial buildings and industrial sectors</p>	<p>TA/ Inv</p>	<p>1. Increased market penetration of energy efficient technologies and practices in residential and commercial buildings</p> <p>2. Enhanced adoption and deployment of energy efficient technologies and practices in the industrial sector</p>	<ul style="list-style-type: none"> - Capacities enhanced of national authorities on developing energy efficiency management standards / codes for industry and buildings, and implement compliance procedures - Techno-economic viability demonstrated for energy efficiency technologies and practices in residential and commercial buildings - Systems optimization approach introduced on energy efficiencies in selected industries - Specific training courses conducted on energy efficiency conducted for national officials, architects/design professionals, building material suppliers, builders/contractors/ developers - Information disseminated and awareness raised on life cycle cost-benefit and return on investments for energy efficiency compliance - Monitoring and evaluation benchmarks developed - Financing schemes designed with commercial banks for entrepreneurs to comply with national energy efficiency standards and systems 					

4. Promoting sustainable innovative systems for urban transport	TA/ Inv	1. Innovative transport systems promoted and plans adopted 2. Enhanced use of low carbon emitting transport modes / systems by urban communities	- Sustainable transport policies, rules and measures adopted - Benefits of low carbon emitting transport systems and planning demonstrated - Financing schemes / incentives developed to popularize low carbon emitting transport systems					
5. Knowledge management, capacity building including training, coherence and coordination	TA	1. Enhanced coherence and monitoring 2. Knowledge management for networking 3. Regional integration	- Regional cooperation and networking strengthened - M & E plan developed and implemented - Knowledge network created at the regional level					
Total estimated program <i>implementation</i> costs (excluding PPG/fees)								