Appendix C

Ghana country paper

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LIST OF ABBREVIATIONS

AIJ		Activities Implemented Jointly
CDM	-	Clean Development Mechanism
CIDA	-	Canadian international Development Agency
COP	-	Conference of the Parties
CSIR	-	Council for Scientific and Industrial Research
DANIDA	-	Danish International Development Agency
DFID	-	Department for International Development, UK
DMTDP		District Medium Term Development Plan
EPA	-	Environmental Protection Agency
GDP	-	Gross Domestic Product
GEF	-	Global Environment Facility
GHG	-	Greenhouse Gas
GIPC	-	Ghana Investment Promotion Centre
GLSS	-	Ghana Living Standards Survey
GNP	-	Gross National Product
GOG	-	Government of Ghana
GPRS	-	Ghana Poverty Reduction Strategy
GRATIS	-	Ghana Regional Appropriate Technology Industrial Service
GSS	-	Ghana Statistical Service
GTZ	-	Deutsche Gesellschaft fur Technische Zusammenarbeit
IFAD	-	International Fund for Agricultural Development
KITE	-	Kumasi Institute of Technology and Environment
MEND	-	Moving towards Emissions Neutral Development
MES	-	Ministry of Environment and Science
MOF	-	Ministry of Finance
MOFA	-	Ministry of Food and Agriculture
MOE	-	Ministry of Energy
MOP	-	Meeting of Parties
MTDP		medium Term Development Framework
NCCC	-	National Climate Change Committee
NCWD	-	National Commission on Women and Development
NGO	-	Non-governmental Organisation
NDPC	-	National Development Planning Commission
TCOP	-	Technical Committee on Poverty
UCCEE	-	UNEP Collaboration Center for Energy and Environment
UNCED	-	United Nations Conference on Environment and Development
UNDP	-	United Nations Development Programme
UNFCCC	-	United Nations Framework Convention on Climate Change
USAID	-	United States Aid for International Development

C1. Poverty alleviation and the CDM

C1.1. The development profile in Ghana

C1.1.1. Poverty in Ghana

Ghana is ranked among the world's low-income countries, with an average income per head of around US $400 a year. These averages mask important variations: women tend to be worse off than men and rural dwellers worse off than urban areas. Although there has been an overall improvement in poverty levels in the 1990s, the improvement has not been even across all population groups, with some urban and rural communities benefiting more than others, see Table C1. The northern part of the country is poorer than the South, and poverty is highest among agricultural food crop farmers.

According to the fourth Ghana Living Standards Survey (GLSS 4), the percentage of Ghanaian population defined as poor has fallen from about 52 percent in 1991 to 1992 to about 40 percent in 1998 to 1999.[1] Extreme poverty (less than $1 per day per person) also declined from 36.5 percent to 26.8 percent over the same period. This represents nearly a third of the population of Ghana (about six million) who are unable to meet their basic nutrition needs, even if they devoted their entire consumption budget to food.

Table C1: Proportion of poor in Ghana

	1991/1992		1998/1999	
	% extreme poor	**% poor**	**% extreme poor**	**% poor**
Accra	11.6	22.4	2.4	4.7
Urban Coastal	14.9	28.3	17.1	26.8
Urban Rural	12.9	25.8	15.1	24.8
Urban Savannah	27.0	37.9	29.7	42.2
Rural Coastal	30.7	49.7	30.1	46.3
Rural Forest	45.1	60.8	24.4	41.4
Rural Savannah	55.9	72.1	58.2	70.5
Urban	15.3	27.5	14.5	22.8
Rural	45.8	62.4	36.2	51.6
All Ghana	35.7	50.8	29.4	42.6

Source: GLSS 3 & GLSS 4

The decline is mainly concentrated in Accra and the rural forested areas (rural and urban). Five out of ten regions (the Upper East, Upper West Northern region, Central and Eastern regions) registered a high incidence of poverty in the 1990s. Currently, about nine out of ten inhabitants are defined as poor in the Upper East and Upper West regions; seven out of ten are poor in the Northern region; and half of the population in the Central region is poor. 60 percent of Ghana's population lives in rural areas.

C1.1.2. Institutional framework for poverty reduction

[1] This is based on upper poverty line of 900,000 cedis per annum (US$114 using June 2002 exchange rates). This estimate, done by, the World Bank and the Ghana Living Standards Survey has become widely accepted.

In 1995, the Government of Ghana established the inter-ministerial Committee on Poverty Reduction (IMCPR) as the highest policy-making organ of Government on all issues pertaining to poverty reduction in Ghana. The IMCPR comprises all ministers responsible for the social sector (health, education, employment and social welfare, local government and rural development.), infrastructure (roads and electricity), agriculture and the National Development Planning Commission (NDPC). The Minister for Finance chairs the IMCPR.

The IMPCR's technical committee, which has its secretariat at the NDPC and is chaired by the Head of NDPC. produced a document: 'Policy Focus on Poverty Reduction in Ghana' (1996), which became the blue print for poverty programming and coordination in the country. The technical commitee is charged with the following functions

- policy analysis and dissemination of information;
- establishment of policy guidelines on poverty reduction for district-level plan formulation;
- commissioning of periodic impact studies and analyses as instruments for monitoring the effectiveness of approved programmes and projects;
- development and coordination of training aids and programmes aimed at capacity building for designing poverty reduction programmes at the sub-national level.

The technical committee also has the responsibility for efficient coordination of all poverty-related activities, projects and programmes.

The NDPC, which is responsible for advising the President of the Republic of Ghana on development planning issues, is expected to prepare guidelines for the development of sectoral strategies and implementation of programmes and projects, and to coordinate poverty reduction activities in the country.

Poverty reduction is currently the primary focus of development policy in Ghana. Key policies are set out in the following sections.

C1.1.2.1. Ghana –Vision 2020

Ghana Vision 2020 provides the long-term (1996-2020) development framework and policy thrust of the country. It seeks the satisfaction of human-centred needs and realisation of the potential of all members of the Ghanaian society. The long-term human development objectives are to improve the quality of life by expanding the opportunities and developing the capacities of all Ghanaians, and to provide for the special needs of the vulnerable (who are usually excluded from the benefits of economic growth) by implementing poverty-targeted programmes and projects.

The *Policy Focus for Poverty Reduction (1996)* emphasised coordination of policies on poverty reduction. It centres on economic growth, expanding access to basic social services and safety nets, increasing food security and nutrition, improving population management, governance and meeting

the needs of women. While the *Policy Focus for Poverty Reduction* is still relevant to meet current poverty challenges, it does not take into consideration the relationship between environmental degradation and the poor. This notwithstanding, numerous poverty reduction programmes and projects have been implemented. A notable one is the National Poverty Reduction Programme (NPRP).

The NPRP is a package of interventions identified by the Government of Ghana, in consultation with the UNDP, aimed at improving the living standards of the poor in the Ghanaian society. The goal of the programme is to empower the poor to reduce their own poverty levels by identifying their needs, defining how their needs can best be addressed and then implementing activities to meet those needs. The focus and objectives of the NPRP are:

- to enhance and build management capacities for better planning and coordination of poverty reduction initiatives;

- to develop and improve skills for productive self-employment, employment generation and the introduction of innovative businesses;

- to establish a Social Investment Fund (SIF) to offer communities easy access to financial resources for sustainable poverty-reducing activities and other development projects;

- to identify and disseminate information on simple and appropriate household and enterprise technologies to enhance productivity and reduce drudgery at the household and enterprise levels;

- to improve the status of women and other vulnerable groups in society, and also promote girl-child education in the country.

The NPRP, which was tested on pilot basis in five District Assemblies, has chalked some successes. Various training programmes in masonry, tailoring, bee keeping and carpentry have been provided with the help of the Social Investment Fund. The training programmes have provided employment particularly for the youth, women and some disabled persons in these districts.

C1.1.2.2. Ghana Poverty Reduction Strategy (GPRS)

The GPRS is a Medium Term Development Framework aimed at economic stabilisation, employment generation, social investment and poverty reduction. The GPRS adopts an integrated and comprehensive approach in the formulation of mutually supportive economic and social strategies to achieve growth of the economy, the elimination of hardcore poverty and a sustainable programme of poverty reduction.

The overall goal of the Ghana Poverty Reduction Strategy (GPRS) is to *achieve equitable economic growth and accelerated poverty reduction within a sustained democracy.* The main elements of the strategy are: participatory democracy, decentralised development management, accelerated and equitable growth involving the mass of the people in a sustainable process of wealth creation and mass poverty reduction. Embedded in this is environmental sustainability. The GPRS recognises a

causal link between the environment and poverty. Accordingly, it focuses on the use of environmental resources in the creation of wealth while making sure that the environment is not depleted.

C1.2. The overlap between CDM projects and poverty reduction

C1.2.1. Research results

Table C2 sets out the development-focused CDM projects scoped by the Ghana steering committee.

Table C2 Development-focused CDM projects selected

Project Number	*Project Name*
Grid connected	
1	Wind Power generation along the coastal belt - electrification of communities
2	Wood residues for Co-generation
Non -grid connected energy projects	
3	Mini-Hydro Electrification project and irrigation for Agriculture
4	Solar technologies (Home systems, Water Heaters, Water Pumps, Water Treatment, Dryers for Agriculture, etc.)
Energy Efficiency	
5	Energy Efficiency Cooking Stoves and Lighting
Forestry	
6	Reforestation and production of sustainably harvested biomass
7	Transition Zone Forestry Regeneration
Transport	
8	Inter – City Alcohol trains//bus services
9	Intra – City electric trains
Agriculture	
10	Production of liquid fuel from energy crop plantations (Jatropha, oil palm, castor oil, sugar cane).

Appendix C1.3 provides more detailed descriptions, the baseline and the replicability value of the projects.

Table C3 highlights the overlap between greenhouse reduction projects and development objectives. Eight out of the twelve development areas are ranked as high priorities, and the concentration of benefits lie in this area. The chief impacts are in the area of income provision, employment, energy provision, and social exclusion.

Table C3 The overlay between greenhouse gas reduction objectives and development priorities in Ghana

		Projects									
	Development priority	1	2	3	4	5	6	7	8	9	10
Income	**H**	X	XX	X	XX	XX	XX	XX	XX	XX	XX
Food security	**H**										
Water	**H**				XX						
Sanitation	**H**										
Housing	**H**										
Employment	**H**	X	XX	X	X	XX	XX	XX	X	X	XX
Energy provision	**H**	XX	XX	XX	XX	XX	XX	XX			XX
Education/ Skills	**H**	X		X	X	X		X	X	X	XX
Health	**Med-H**	X		XX	XX				X	XX	
Transport	**Med-H**								XX	XX	X
Crime & Security/Peace	**Med-L**										
Social Exclusion	**L**	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
Replicability		L	H	L	H	H	H	H	L	L	H
Assured benefits Score		6	16	9.5	19.5	16	16	16	9.5	13	21
Other potential Benefits		18.5	0	15	10	5	0	5	8.5	10	3
Total benefits		24. 5	16	24.5	29.5	21	16	21	18	23	24

Assured benefits, those benefits that would occur through the implementation of the project itself, receive two XX. Potential benefits rely on collateral assets being supplied, for example, solar home systems in rural areas may lead to rural enterprise development if credit services are also provided, however, credit services lie outside the project boundary. 1 X represents these benefits. Each benefit receives one point, which is multiplied by its developing ranking. Impacts are weighted according to development priority: those in a high priority are weighed by 5, medium priority by 3 and low priority by 1. Where the project partners have established medium-high and medium-low priorities the factors are 3.5 and 2.5 respectively. Two numerical rankings are given at the bottom of each column. The first shows the value of the assured benefits, and the second ranking shows the value of potential benefits.

The focus of the scoped CDM projects in Ghana is on four sectors: energy, forestry, transport and agriculture, highlighting the difference facets of poverty in Ghana.

The 1998 National Energy Statistics reveal that 69 percent of the total national energy comes from biomass consumption. The Ghana Living Standards Survey, (2000) reveals that the major sources of energy at the household level are wood (62.5 percent) and charcoal (30.6 percent), and sources of energy for lighting are electricity (39 percent) and kerosene (60 percent). Currently, it is estimated that 45 to 50 percent of the communities with population above 500 have access to grid electricity because of the Government's rural electrification programme, which started in 1980.

The future availability of wood fuels to meet the country's energy needs is uncertain, due to high rates of deforestation, desertification and shifting agricultural practices. Over the last half-century, forestry

resources have become depleted at an alarming rate. In 1990, Ghana had a population of 14.5 million people and about 8.3 million hectares of trees (FORIG Records, 1999). Today, with a population of about 18.5 million (2000 Pop Census), tree cover has dwindled to less than 2 million hectares. Of this total, about 1.6 million hectares are in forest reserves, while the remaining 0.4 million is open to free but controlled access. Unsustainable logging and farming are key reasons for the loss of tree cover. [2] Forestry and logging are one of the agricultural sectors to grow impressively in 2000 (growth rates of 6.2 and 11 percent respectively).

The agricultural sector is crucial in Ghana: it accounted for 36 percent of real GDP in 2000, 55.6 percent of all incomes and 66 percent of total household expenditure. Cocoa and timber are the major contributors to export earnings and the value of other agricultural exports, notably fish and other commercially important tree crops such as oil palm, coconut and rubber kola are increasing.

Poverty is high amongst food crop farmers for a variety of reasons. The average farm size is small, with smallholder farms accounting for about 80 percent of total agricultural production. The average food crop farmer has limited contact with the product market and is unlikely to use fertilisers, pesticides, high yielding seed varieties and irrigation-based techniques of production. The poor marketing and distribution network is a constraint on the expansion of production. There are no well-established marketing chains for food crops, as they exist for the cocoa industry to transfer the produce from the farm to the final consumer. The markets for most food crops are monopolised by "middlemen " and the cost of accessing markets is high. Other challenges that the agricultural sector faces are inadequate production structures, a prevalence of low-output technology, traditional rain-dependent and manual production practices, low balance of payments, and inadequate access to essential production resources such as land, credit and technology.

The highest-ranking project in terms of direct benefits is G10, the production of liquid fuel from energy crop plantations. It impacts directly on income, employment, energy provision and skills development. It has many secondary benefits and social benefits, since it targets rural farmers. The proposed project would establish energy crop plantations and also revamp two sugar-cane factories in the country. The expected output is the production of liquid fuel such as alcohol, castor oil and Jatropha oil for use in industry, homes and road vehicles. The project opens up the range of farming options for farmers.

Following this, in terms of direct benefits, is G4, a package of solar technologies. A cluster of projects comes third: G2 , cogeneration in sawmills, G5, energy efficiency cooking stoves and lighting, G6, a

[2] Ghana's strategic economic development framework – Vision 2020 – outlines the critical issues facing the forestry sector that need to be solved as follows:[2]

- The depletion of forest cover leading to loss of soil fertility, natural sinks for carbon dioxide, water resources and, in extreme cases, desertification;
- Unsustainable extraction rates of timber and other forest products;
- The destruction of the forest resource base through excessive logging, land clearing for agriculture or bush burning as part of a traditional system of land preparation for cultivation, mining, and quarrying;
- Increasing demand for fuel wood;
- Indiscriminate use of land.

reforestation project for the production of sustainable harvested biomass, and G7, a regeneration forestry project.

When considering total overall benefits, the highest-ranking project in Ghana is G4, the provision of a package of solar technologies. This is perhaps not surprising as the technologies provide a range of services, from lighting to refrigeration for health centres to water supply. Water supply is particular is unsatisfactory for rural households as most communities rely on streams for their source of water supply. As a result of long distances from water sources in rural areas and the limited number of public standpipes in urban slums, most households are unable to meet the recommended per capita daily water consumption vital for good hygiene. This has contributed to the occurrence of water-borne diseases.

G1, a wind farm, and G3, a mini hydro project, provide electrification to communities and as such their indirect benefit values are high, making them one of the highest overall scorers. However, their direct benefits are low, highlighting the fact that projects that provide energy can have a much higher impact if collateral services are also provided. For example, a key benefit from G1 is that electricity could help to improve the income strategies of fishing communities. Electricity would allow these communities to store their harvest and process the fish. Currently, because most of them do not have access to storage facilities and they are forced to sell their daily harvest cheaply or use firewood to smoke the fish. These benefits are conditional on, for example, credit services being made available to be able to set up these small-scale processing industries. Similarly, G3, mini hydro electrification, could enable small-scale industrial activities to start up, and facilitate on-going adult literacy programmes, but only if the projects also include elements that are necessary for these activities to take place.

The main conclusions from the Ghana study are as follows:

- The potential exists for the majority of CDM projects to lead to high development impacts in Ghana.
- All of the projects are related to energy - two in the transport area and the rest in non-transport energy provision.
- All projects, with exception of the wind farm and the mini hydro project (purely electrification projects), will lead to direct impacts on income.
- All projects have positive impacts on social exclusion, by strengthening the participation of rural communities, and in some cases, women within these communities, in decision-making.
- Some projects impact on education and skills, however this is indirect and is dependent on the provision of other assets.
- The projects with the highest replicability of all the projects are generally implemented at a household level.

C2. Capacity building needs

C2.1. Existing capacity

C2.1.1. Institutional framework for CDM implementation

Ghana signed the United Nations Framework Convention on Climate Change (UNFCCC) in June 1992 and subsequently adopted and ratified the Convention on 6th September 1995. Ghana has developed the instrument of ratification of the Kyoto Protocol and it is currently before cabinet.

The National Implementing Agency (Operational Focal Point) for the UNFCCC is the Environmental Protection Agency (EPA). In 1998, the EPA established the National Climate Change Committee (NCCC), which is chaired by the Chief Director of Ministry of Environment and Science (MES). After the establishment of this committee, MES assumed the coordination role for the committee. The committee was established to review policies and programmes that complement national development priorities, and also help reduce greenhouse gas emissions. The committee is cross sectoral, and draws on members from different ministries, the private Sector, NGOs and other stakeholder groups. Subcommittees have been formed under the NCCC and they focus on the following policy, education and awareness creation, CDM projects, national GHG inventories and adaptation.

The Ministry of Environment and Science has prepared a proposal for establishing a Climate Change Commission in Ghana. The objectives of the Climate Change Commission may include:

- to develop capacities (institutional, human and technological) in Ghana to design, evaluate and implement projects that would be eligible for financing under the CDM;

- to serve as a regional center for measurements and verification of CDM projects for Ghana and the Economic Community of West African States (ECOWAS) sub-region.

C2.1.2. Capacity building actions to date

It is worth noting the activities that have to date been implemented in Ghana to inform the assessment of capacity needs of Ghana with regards to implementation of a greenhouse gas mitigation strategy. Table C4 sets out the capacity building activities carried out in Ghana to date.

Table C4 Summary of capacity building activity in Ghana to date

Sponsor	Action	Participants (where relevant)
Awareness raising and technical capacity building		
GEF/UNDP Capacity Building programme 1996-1998	National Conference on Climate Change Three zonal seminars on Climate Change. Creation of a National Climate Change Committee.	Ministry of Environment and science, Environmental Protection Agency, Ministry of Trade & Industry, Metrological department, Ministry of Agriculture, Ministry of Energy, Ministry of Transport, Ministry of Finance, Ministry of Local Gov't, Ministry of Forestry Association of Ghanaian Industries, Chamber of Commerce, NGOs in the environment sector and academics in the sectors of Natural Resources, Agriculture, Forestry, and Meteorology, District assemblies.
UNEP Collaboration Centre for Energy and Environment (UCCEE), 1999	Developing sustainable development indicators for GHG mitigation projects; Identification of projects; Building capacity for participation in the CDM	Ministry of Environment and Science, Environmental Protection Agency, Ministry of Trade & industry, Metrological department, Ministry of Agriculture, Ministry of Energy, Ministry of Transport, Ministry of Finance, Ministry of Local Gov't, Ministry of Forestry, Ghana Railway Authority, Ghana Investment Promotion Centre, Utility providers, Industrial private sector, environmental NGOs , academics in the sectors of Natural Resources, Agriculture, Forestry, Meteorology.
UNEP/UCCEE, 1998	African Regional Workshop on CDM	Country representatives
GEF/UNDP Inventory Preparation 1997	Organisation of GHG inventory National Workshop Establishment of a National Working groups on inventory	Country representatives
Institutional		
UNDP/GEF Technology Transfer Needs Assessment-2001 (On-going) Enabling activities Phase II (expedited financing)		Technology Needs Assessment in Energy and Waste sectors
UNDP/GEF Technology Transfer Needs Assessment-2002 On-going) Enabling activities Phase III (expedited financing		Technology Needs Assessment in Energy and Waste sectors
Systemic		
DFID, 1999 - 2002		An assessment of the links between the CDM and poverty alleviation. Recommendations on capacity building actions
UNDP/GEF, 1998		Preparation of Ghana initial National Communications and national greenhouse gas inventories
Netherlands Climate Change Assistance Programme 1998-2000		An assessment of vulnerability of Ghana's water resources and coastal zone. Development of National Climate Change Scenarios
UNIDO Africa CDM Project Initiative, 1999-Phase I		Identification of projects in the industrial sector; Identification of capacity building needs.

UNIDO Africa CDM Project Initiative, 1999-Phase II	Identification of projects in the metal finishing industries; Identification of capacity building needs in the metal finishing industries. Identification of barriers and removal strategies in relation to tech. Transfer in industry. Identification of project portfolios for these industries Participation in Regional Workshop in COP7

Source: KITE & EPA

The emphasis on capacity building to date has been on awareness raising and identification of greenhouse gas mitigation options, focusing on the five key sectors namely forestry, energy, agriculture, waste and industry.

C2.2. Capacity building needs for CDM project implementation

C2.2.1. Research results

The gap analysis, shown in Table C5, shows that that there is little capacity in Ghana for any of the indicators chosen.

Table C5 Gap analysis for capacity needs for CDM project implementation

Indicators of capacity	Level of capacity	Details
Skills/expertise/awareness		
Awareness levels	?	Awareness has been built among a limited number of stakeholders particularly at the National level; An evaluation from the initial MEND training workshops organized in Kumasi and Accra revealed that only around 40% out of forty (40) of the invited participants were aware of the CDM.
Technical expertise	?	There exist some technical and financial expertise. These would however have to be given some specific training on CDM.
Institutional		
CDM Office	?	Ghana is in the process of setting up a Climate Change Commission, pending finding funds.
Small scale projects bundling mechanism	X	
Technology transfer strategy	X	
Policy & Legal Context		
Country climate change strategy	?	Ghana has prepared and submitted the Initial National Communications that sets out a mitigation strategy.
Legal framework	?	Ghana is in the process of developing and promoting a regulatory CDM process
Integration into other policy areas	?	There are very few policies that favour the transfer of clean technology. Currently there are no specific policies for CDM.
Development of standardised approaches to the project design document	X	Ghana has not yet established standardise baselines for CDM projects.
Streamlined CDM approval procedures	X	There is no fast-track process for CDM projects with a poverty reduction focus. However the Climate Change Commission would play this role

(x=not available, ?=some/partly, ??=good.)
Source: MEND Steering Committee

Stakeholder consultation revealed that the capacity to attract and process projects under the CDM is patchy for the country and that capacity needs to be built if Ghana is to participate effectively in the implementation of CDM projects.

The following sections provide further country-specific information on five key areas of capacity needs:

- Awareness raising;
- Establishing a climate change commission;
- Experience in the implementation of the scoped technologies;

- Technology needs assessment;
- Supporting fiscal regime.

For information on other capacity indicators, please refer to the main capacity building paper.

C2.2.1.1. Skills, Expertise and awareness

The level of awareness of the opportunities offered by the CDM to different stakeholder groups is low, see Table C6 for details. Capacity building actions to date have focused on key public and private institutions in Ghana, with some outreach to other Ministries, academia and NGO's. The training programmes organized so far targeted the large-scale industries and participants from some government organizations.

Table C6 Level of awareness of CDM among stakeholders in Ghana

Actor/Institution	Level of awareness	Comments
National Climate Change Committee. Which Comprises of various Ministries	Medium - High	The Directors and technical staff of some Ministries are aware. Generally, these belong to the Ministries of Energy and Environment, Agriculture, Trade & Industry, Metrological Services, and Lands & Forestry.
National Development Planning Commission	Low - Medium	Poverty-focused groups should be highly involved in CDM
Ministry of Local Government & Rural Development, District Assemblies.	Low	Most of the district assemblies have not been involved in CDM capacity building, thus the need to involve them more
Business Groups.	Low - Medium	Capacity building has targeted the large-scale industries. The Association of Ghana Industries has about one thousand and five hundred (1500) subscribing members. Unfortunately, only a small percentage of these groups and their members have been involved in CDM Capacity building programmes.
Research Institutes	Some low, some high	More research institutions like the universities and others would have to actively participate in future capacity building programmes
Financial institutions:	Low	More financial institutions such as the Commercial bank, investment banks, Merchant banks, rural banks and micro finance enterprises need to be brought into the picture. Investment in the energy sector is viewed as the preserve of government, with government sponsoring most of the energy projects either through loans or grants from multilateral institutions.
Indigenous entities such as informal financial entities & village associations	Low	Involvement of these groups in training programmes.

Source: MEND Steering committee

Skills, expertise and awareness are crucial not only to the development process in Ghana but also the implementation commitments made under the UNFCCC. This implies an ability to train and mobilise scientific and management expertise on climate change and CDM; to establish, organise and operate basic development data especially on energy production, distribution and consumption; to take stock of natural resources; and to undertake accurate projections of response options to different scenarios. In building capacity, effort must also be made to involve community participation in the selection and implementation of CDM options. It will be important for future actions to concentrate on awareness raising of stakeholders not conventionally included in climate change issues, such as the development community, financial institutions, the business community, and the areas of government not directly related to climate change.

The implementation of sectoral and district plans based on the Medium Term Development Framework (2002-2004) requires competent skills and equipment to ensure that the objectives of the GPRS including issues on environment are well implemented. This calls for the need to sensitise policy formulators and policy-makers, private sector, research institutions, non-governmental organisation and the media on climate change issues. Advocacy could also be further strengthened in the country through the establishment of networks linking individuals and institutions in the country on climate change issues.

C2.2.1.2. Establish a Climate Change Commission

The Environmental Protection Agency (EPA) proposes to establish a National Commission in Climate Change. Under this commission, eight units have been proposed namely National Communication, Finance and Investment, Vulnerability and Adaptation Assessment, Clean Development Mechanism, Technology Transfer, Legal/Policy, Education, Training and Public Awareness and Greenhouse gas (GHG) inventory compilation and GHG mitigation Assessment.

The CDM unit would have the following functions;

- promotion of the development of the requisite human and technological capacities in Ghana for the design, evaluation and selection of project for qualification for funding under CDM.
- implementation, evaluation and monitoring of CDM projects;
- collation of CDM project proposals from both government agencies and non-governmental agencies and liaise between Ghana and global CDM offices;
- development of CDM policies that would to develop an enabling environment to attract investors and to define of national CDM goals within the context of other national and regional policies and programmes;
- integration of CDM policy with other environmental and social policies;
- formulation of national CDM negotiating positions and contribution to regional and international debate;
- dissemination of information and awareness creation.

The plan is to set up a Climate Change Commission in 2002. To expedite the early establishment of the commission and the CDM units, it is envisaged that donor assistance would be required for the early years of the commission

C2.2.1.3. Experience in technology implementation

Improved Cook stoves: The Ministry of Energy (MOE) is the pioneer of the dissemination of improved charcoal cook stoves (Ahinbenso) in the country. Since 1992, the Ministry has distributed 30,000 improved charcoal cook stoves and 5,000 sawdust stoves. The improved charcoal cook stoves are manufactured locally and have been found to be 42 percent more fuel-efficient than the traditional coal pot, both of which are fired by charcoal. Some other benefits are savings in amount of fuel used to cook, reduced cooking time, reduced accidental burns and improved cooking conditions.

Cogeneration: Two sawmills in Ghana are currently producing heat and power simultaneously using their processing waste. Other studies on commercial power production from sawmill waste and agricultural residues to date include the following;

- Quaye, E.C. (1988) "Potential for Cogeneration from Wood Residue: Case Study of Three Cities in Ghana"
- Hagan, E.B (1997) : Pre-feasibility Study on Letus Power Plant
- KITE, (1999) "Pre-feasibility Study on a Wood Waste Power Plant for Maxwell Owusu Timbers Limited.

Findings from these studies reveal that the low electricity tariffs prevailing in Ghana have been responsible for the virtual absence of this technology in the country. However, all the studies indicate that where electricity is priced at full economic cost, the economics of cogeneration is very attractive.

Solar Projects: The Ministry of Energy (MOE) and other private dealers such as Danafco Engineering (DENG) are disseminating solar photovoltaic technologies for domestic appliances, water pumps, crop dryers, and vaccine refrigerators. The MOE is implementing several programmes, including the Wechiau Solar Battery Charging project, a solar electrification project funded by the Spanish Government, the Global Environment Facility (GEF)/UNDP solar project, a solar street-lighting project on University of Ghana campus, and a solar crop drying project. Most of these projects are off-grid electrification projects.

According to MOE's 1998 Annual Report, about 700 solar PV systems have been installed nationwide, including 400 telecommunication applications and 70 refrigeration applications. 2000 homes, 20 school/community systems, 246 streetlights, and two hand pumps use solar energy systems.[3] By December 2001, estimated total installed capacity of PV systems in Ghana was estimated to be 0.36MWp (MOE/RESPRO/KITE). MOE has also built two natural convection solar crop dryers in the Central Region.

Private solar dealers and foreign donor agencies mainly distribute solar water heaters and refrigerators. DANIDA[4], for instance, under the DANIDA/Ministry of Health Solar Project, has installed 15 solar refrigerators, four solar pumps, and 14 solar water heaters in hospitals and clinics in nine regions. The Mechanical Engineering Department of the Kwame Nkrumah University of Science and Technology (KNUST) has also undertaken several solar projects. Notable examples are the TU

[3] The Minister of Energy disclosed this during a "Meet the Press" Programme, as reported by *Daily Graphic*, 26 April 2000.
[4] DANIDA stands for Danish International Development Agency.

Berlin/UST Solar Pump Project, the CIDA-University of Regina/UST Kumasi Renewable Energy Project and the Thermo siphon Solar Water Heater Project.

C2.2.1.4. Technology needs assessment and dissemination

There is currently poor information dissemination for technology-related information and the country has no technology clearinghouse to critically audit incoming technologies. Currently, there are some national institutions that have served as technology information, transfer and dissemination centres. These include the Technology Consultancy Centre (TCC),[5] GRATIS Foundation, Intermediate Technology Transfer Unit (ITTU)[6] and National Board for Small-Scale Industries (NBSSI). There is some co-ordination among these institutions but this is limited. It is proposed that a technology-clearing house be created in the Climate Change Commission.

In addition, there are organisations that undertake technology research and service activities. These include the Council for Scientific and Industrial Research (CSIR) with thirteen research institutes, Centre for Policy Analysis (CEPA), the Ghana Atomic Energy Commission (GAEC), the Institute of Economic Affairs, the Ghana Standards Board and other non-governmental organisations like KITE, Energy Foundation and Friends of the Earth.

C2.2.1.5. Integration of CDM policy into other policy areas

Carbon value (CERs) may improve the internal rate of return of greenhouse gas reduction projects, but in many cases will make a marginal difference, until carbon prices increase. Therefore the development of supporting policies is relevant for the success of CDM implementation. Fiscal incentives can be particularly important in helping to attract clean technology transfer.

Ghana has yet, no specific Clean Development Mechanism (CDM) policies in place, however there are some supporting policies for clean technology transfer in the greenhouse gas mitigation sectors, which have been highlighted in Table C7. There are no specific fiscal policies that target poverty-focused CDM-type projects, although some of the poverty reduction projects will have access to sectoral fiscal incentives. In contrast, there are negative incentives for clean technologies such as the subsidy on conventional energy and tax allowances for road vehicles.

[5] The TCC is part of the Kwame Nkrumah University of Science & Technology (KNUST). The Centre carries out research into new technologies and provides advice on applying these in the field. The centre works particularly with the agriculture, industry, and the transport sectors.

[6] The GRATIS Foundation and the ITTU set up under GRATIS provide regional and local level advice on technology application. Technologies they have facilitated include fabrication of equipment, manufacturing of machines and machine tooling. There is also the Development and Application of Intermediate Technology (DAPIT) for the development and transfer of technology to the micro, small and medium enterprises.

Table C7 Supporting sectoral policies for CDM project implementation

	Sectoral strategy plan	**Existing fiscal policies relating to the sector/programme**
CDM- related	X	None
Sustainable development	☞	
Poverty reduction	☞☞	
Fossil fuel energy	☞	Conventional energy is highly subsidized in Ghana Electricity is produced mainly from hydro (70%) and thermal plant (30%) using light crude oil
Renewable Energy	☞	A fund has been established for the promotion of projects for the development and utilisation of renewable energy resources and rural electrification. Primarily a proportion of government levies on petroleum products, electricity and natural gas funds it; The levy is set at one Ghana Cedi per litre. There is also imposed a special levy of 1.07/kwh payable by all consumers of electricity in Ghana as an additional charge towards the cost of rural electrification. Currently the fund is used towards electricity planning (National Electrification Scheme). A zero rate (0%) of import duty applies to solar, wind, thermal energy and electric generating sets of 375kva and above, Solar panels, educational materials and motor vehicles falling within H. S Code Nos. 8701,8704, 8705 and 8703.
Forestry	☞	The National Plantations Development Project provides soft credit partly from the Government and partly from foreign Donors like the World Bank and African Development Bank (ADB) to commercial plantation developers. Tax rebates are available for industries located in regional capitals other than Accra and Tema Capital allowance. A reduction of 8% on export tax for non-traditional timber exports Tax exemption for income from plantation thinning and corporate tax of 8% for industrial plantation Income tax relief of 100% for five years from start of production in respect of all priority areas Additional incentives in the pipeline include: ?? Tax rebate of 50% on reinvestment in wood-drying and treatment ?? Soft-term credits for industrial plantations ?? Customs duty and sales tax exemption
Transport	X	There are rates of annual allowance on plants and machinery, applicable to specific items at discretionary rates. Some specific ones in the

		transport sector are as follows; ?? Lorries 10% ?? Railway Wagons 12.5% ?? Motor Van 20%
Agriculture	☞	A zero rate (0%) of import duty applies to agricultural and industrial machinery. 10 years tax holidays are available for investments into tree crops like oil palm.
General investment	X	Customs Duty Exemptions Tax Incentive provided under the Internal Revenue Act-Act 592 include: Tax Holiday (from start of operations) for up to 10 years for the following industries: ?? Real Estates ?? Rural Bank ?? Agriculture and Agro-industry Industries located outside regional capitals other than Accra and Tema enjoy 25% tax rebate. Industries located outside regional capitals enjoy 50% tax rebate Industries located in Free Zones and exporting not less than 70% of their output enjoy tax holidays for 10 years after start-up. In addition, income tax rate is only at 8% after the tenth year. There are adequate guarantees to protect the interests of foreign investors.
FREE Zone Board		

(X=not available, ?=some/partly, ??=good.)
Source: Ghana Vision 2020 & Ghana Investment Act

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Appendix C1.1: Stakeholders consulted

MEND Project Steering Committee

1.	Poverty Reduction Expert	Dr. Rudith King
2.	NDPC – Poverty Reduction Unit	
3.	MEST	Mr. Barnes/Mrs. Damptey
4.	EPA	Dr. Acquah/Mr. Agyeman-Bonsu
5.	Energy Sector	Dr. Ofosu-Ahenkora/Mr. K. Anaman
6.	Agriculture/Lands and Forestry Sector	Dr.(Mrs.) Bertha Gana/Mr. Bobobee
7.	Industrial/Enterprise Development Sector	Mr. E.O.Boabeng/Mr. Robert Tandoh
8.	Financial Institutions	Ms. Tharesa Osei-Tutu/Mr. D. Gyimah
9.	Development NGOs	Mrs. Yaa Peprah Amekudzi
10.	Rural/District Level Organisations/Projects	Mr. Buabeng/Mr. Sampson Madana

LIST OF MEND NATIONAL STAKEHOLDERS MEETING

No	**NAME/POSITION**	**ADDRESSES**
1	Martin K. Opoku-Mensah	PO Box CT 5767, Cantonments,Accra
2	Ernest Opong Boateng	N.B.S.S.I., BOX MB85, Accra
3	Dr. (Mrs.) Bertha Gana	MOFA, DCS, Accra
4	Dr. (Mrs.) Peggy Oti-Boateng	TCC, UST, Kumasi
5	Christian Biaku	Energy Foundation
6	Michael Mends	Sin api Aba Trust K'si
7	Dr. Sam Nii Odai	Civil Engineering, UST
8	Kwame Kenyah	NALAG, Box 1954, Accra
9	Kwaw. Anaman	Mech. Eng. Dept., UST, K'si
10	Kwame Asamoah Akuoko	IFAD/REP Box 2, Offinso
11	Dr. Rudith King	UST, K'si
12	Abeeku Brew-Hammond	KITE, K'si
13	Patience Damptey	MEST
14	Daniel Gyimah	Exim Guaranty Co Ltd.
15	Mrs. Sarah Agbey	KITE
16	Nana Twum Ampofo	Bank of Ghana
17	Ishmael Edjekumhene	KITE, Kumasi
18	Edward M. Abakah	C/o KEEA, Elmina, CR
19	Tharesa Osei-Tutu	Leasafric
20	EYH Bobobee	Senior Lecturer, KNUST, K'si
21	Sampson Madana	B.D.A., Box 40, Berekum
23	John Quansah	TCC, KNUST, K'si
24	Dr. Mensah Brown	EDM, Accra
25	Mr. S.N. Buabeng	BIRD, UST, K'si
26	Samuel Adu-Asare	MME
27	Robert B. Tandor	Box M. 47, MOTI, AR

Appendix C1.2 Poverty baseline

	Qualitative discussion	Indicators
Income	Ghana is ranked among the world's low-income countries, with an average income per head of around $400 a year. These averages mask important variations: women tend to be worse off than men and rural dwellers worse off than urban areas. Poverty is defined as persons whose incomes are less than 2/3s of the national average. Food is a major item of expenditure for all Ghanaians and its share in total household expenditure has increased. Focus group discussions in Ghana reveal income-related characteristics of poverty as follows: ?? Lack of employment opportunities ?? Lack of small enterprise credit ?? Level of wages ?? Lack of income generating opportunities	?? The richest 10% are 27.3% of the total population. ?? 35.9% of the population is defined as poor. 80% of these people live in rural areas. ?? Expenditure on food by the poor is 69% of total expenditure ?? Most of the poor depend on remittances from their relatives outside ?? Share of income held by population groups between 1986 -1996 Richest 10% - 27.3 Richest 20% - 42.2 Poorest 10% - 3.4 Poorest 20% - 7.9%
Food Security	Available evidence indicates that malnutrition is a serious problem, especially among young children and pregnant women. The most common types of nutritional disorders occurring in Ghana are protein-energy malnutrition, anaemia, vitamin A deficiency and goitre. These are manifested in low height/weight in relation to age (stunted); low weight for height (wasted); or clinically classifiable by appearance as in the case of goitre, marasmus and kwashiorkor (severely malnourished)	?? In 1988, 31% of children were stunted and 8% wasted due to malnutrition. ?? Percentage of children under-five suffering from underweight (1990-1997) –27% ?? Percentage of children under-five suffering from stunting – 26%

	The GDHS shows that in 1988 about 31% of children were stunted and 8% wasted. In general however, malnutrition like other health problems is predominantly a rural phenomenon and especially acute in the northern savannah zone. In addition, seasonal trends in food intake also influence malnutrition. For example, surveys have found that majority of rural pre-school children in Upper East Region are malnourished during pre-harvest, early post harvest and late post harvest periods	
Health	There has been little change in the country's morbidity pattern over the years and endemic diseases such as malaria, water-borne diseases and upper respiratory tract infections are still widespread. These diseases are usually prevalent in areas where there is widespread poverty, poor environmental conditions and low standards of personal hygiene. There have however been some improvements, notably the eradication of onchocerciasis (river blindness) in areas in the northern parts of Ghana. In general, slow improvement in the health of the population has resulted in a decline in mortality rates and infant and child mortality High infant and child mortality death rates are linked to demographic and socio-economic factors such as high fertility, short intervals between births, malnutrition and communicable diseases hence the disparities between regions i.e. rural and urban areas. Access to health services for the poor remains low.	?? There has been a light improvement in life expectancy which has risen to 55 years in 1993 on average to 61years in 1999 ?? Infant and child mortality was high at 87 and 84 per 1000 respectively in 1988, but dropped to 71 per 1000 in 1996 ?? Deaths of children aged five years and below accounted for 30% in 1992. ?? Modern health institutions provide services to about 60% of the population. They only covers 45% of the rural population. In Ghana, about 53% of the population have physical access to a health facility ?? Pop. Per hospital bed (1990-1995) - 685 ?? Life expectancy at birth in 1997 was 60 years ?? Infant mortality (per thousand) in 1997 was 66 ?? Maternal mortality (per 100,000 live births) in 1995 was 740 ?? The population per hospital bed between 1990 – 1995 was 685

Water	Disparities between urban and rural areas are particularly marked in the case of water supply. The quality of water available to rural households is unsatisfactory as most communities rely on streams as their source of water supply. As a result of long distances from water source in rural areas and the limited number of public standpipes in urban slums, most households are unable to meet the recommended per capita daily water consumption vital for good hygiene. This has contributed to the occurrence of water-borne diseases. Although water supplies are better in urban than rural areas, they are still inadequate. The Ghana water and Sewerage company has not been able to expand the supply system to meet the growing urban population, resulting in intermittent water supplies as well as poor quality water to certain parts of urban areas. The supply of water to both rural and urban areas is mainly constrained by a lack of adequate resources, both human and financial, rather than any basic shortage.	The percentage of the population with access to safe water between 1993-1996 Total pop. – 65% Urban pop. -88% Rural pop. –52% Sources of Drinking Water Pipe borne – 41% Wells - 34% Natural Sources – 25%
Sanitation	Sanitation is a development priority because were only 11% of the rural population have access to it. This have serious health problems especially during outbreak of infectious/contagious diseases	The percentage of population that had access to sanitary facilities between 1993-1996 were 75% for Urban population and 11% for the rural population
Education	Government expenditure concentrates on primary and secondary education. Expenditure on tertiary education is less than 1% of total enrolment at al levels. Basic education receives just half the expenditure, even though it accounts for over 90% of enrolment, excluding those in non-formal education. Inequalities in adult literacy rates can be found among sexes and between urban and rural communities. The illiteracy rate in Ghana has been reducing over the years. Most rural communities have primary schools. The rates of absenteeism in rural	In 1985, total illiteracy was 50%, reduced to 43% and 34% in 1990 and 1997 respectively and then to 35% in 1999. ?? The adult literacy rate is 53%. ?? Illiteracy for male in 1997 – 23% ?? Illiteracy for female in 1997 – 43% ?? Number of pupil per teacher at the primary level in 1990 was 29 ?? Pupil / Teacher ratio in 1990 at the primary level was 29, a figure far below the National average of 40

	communities are high. Most children do not go to school during planting and harvesting seasons. Some children miss school on market days. There is however a government policy called the Free Compulsory Universal Basic Education (fCUBE) to help address this.	Primary education gross enrolment ratio in 1990 was 75
Energy	Estimates for access to electricity vary widely. One source estimates the percentage of the population in Ghana with access to electricity at about 25% (Ghana-US. Htm, 1998). Another source report the estimated percentage of total population with connections to electricity supply in Ghana as having grown from about 12% in 1989 to 36% in 1993 (Brew-Hammond, 1998). Only 15% of rural dwellers have access to grid electricity. (KITE 2000). It has been estimated that woodfuels constitute about 75-80% of the country's average annual energy production in 1990 (MOME 1991). The situation is no different now. The future availability of woodfuels to meet the country's energy needs is uncertain. The uncertainty can be attributed to environmental and ecological damages caused by high rates of deforestation and desertification, shifting agricultural practices, which lead to degradation of soils.	**Firewood** for cooking–National Total (69%), Rural (92%) and Urban (25%)
Employment	55.6% of the incomes of all Ghanaians are derived from agriculture, followed by income from other forms of self-employment - 28.2%. Income from employment provides only 7.3% of household incomes. For the poor, the comparable figures are 65.1% from agriculture, 22.8% from other forms of self-employment and only 4.4% from employment. The major reason for child labour is the unfavourable economic situation that Ghana finds itself in at the moment. (unemployment, broken homes, etc.). Some parents are forced to send their children to sell on the streets and earn some money to sustain the family.	?? 65% of the poor are engaged in subsistence farming Children under 14 years working: 1970 - 16.3% 1980- 16.2% 1990 - 14.2% 1997 - 12.8% ?? Proportion of the pop. aged 15-64 employed in the formal sector (13%) ?? Proportion of pop. aged 15-64 employed in the informal sector

		(87%)
Transport	This is a priority because of lack of market access for rural communities especially farmers to sell their produce at favourable prices. Most often, the farmers are cheated by a group called the middlemen (they go to the rural areas by farm produces at cheaper rates from the farmers and transport these to the urban centres and sell at exorbitant prices). Bad roads also affect the transportation of health, educational and information facilities and services to the rural communities very difficult.	1991 – 23% Paved primary road 1995 – 24.9% Paved primary road 1996 – 24.1% Paved primary road
Crime peace & Security	This is because of periodic coup d'tats in the sub-region, which usually impedes on development. Also, high crime rates also deters foreign investors in coming to invest, and since the current government wants to attract a lot of foreign investors into the economy, to help achieve its Golden Age of Business crime and security is ranked Medium – High.	
Housing	The housing stock in the country has hardly increased whilst the population has continued to grow, putting considerable pressure on the availability and affordability of housing. The shortage of housing is largely due to financial constraints. The performance of the housing finance system has not been adequate, as the system caters mainly for the minority in the upper income groups.	There is a national average of 10.1 persons per housing unit in 1987. The statistic was worse for Accra: 12.1. A current occupancy rate of 7-12 persons per unit.

Appendix C1.3 Description of the projects selected

Title	Description
1. Wind Power Generation	The project would establish wind farms along the South-eastern Coastal belt of Ghana to supply power to the communities that have no access to the national grid. Fishing communities along the coast, who do not have access to electricity currently, will be able to access electricity for storing of their harvest, processing of the fish, thus improving upon their income. Currently, because most of them do not have access to storage facilities they are force to sell their daily harvest at very cheap prices or use firewood to smoke the fish. The power can also be used for small-scale industrial activities in the area and also assist promotes the adult literacy education imitative in Ghana The baseline is use of fuel wood for cooking and kerosene for lighting, and the use of light crude oil in the thermal plant. About 65% of the populace in Ghana depends on fuel wood and charcoal for domestic cooking.
2. Sawmill Residues for Cogeneration	The project would establish a plant to supply both electricity and heat to industrial firms, using waste biomass residues. Currently, some of the residues are used to generate heat in some sawmills but most of the sawdust are burnt or treated as refuse. The excess electricity would be fed to the national grid. The benefit of the project is that employment would be created, families that assist in carting the wood residues will provide income and the power generated can be used by the local community for small-scale industrial activities like corn milling, processing of food and the production of local drinks. The project size is between 3.5 - 5MW and would be replicated in other parts of the country. Currently, three areas have been identified for feasibility studies namely; Ashanti Region, Brong Ahafo Region and Akim Oda - The baseline is light crude oil for the thermal plant as well as the use of biomass.
3. Mini-Hydro Project	The project would develop the potential mini-hydro sites identified in Ghana, and would supply electricity to communities that do not have energy for lighting and small-scale industries. A potential benefit of the project is that it provides for possibilities for small-scale industrial activities to start up, thus creating employment for the youth and provide reliable income for their families. Also the electricity would provide lighting for the on-going adult literacy programme and extra student studies at night. Farmers in these communities can also add value to their farm produce, thus getting more income than selling them in the raw state. The baseline is fuel wood and charcoal for cooking, kerosene for lighting and light crude oil used for the thermal Plant
4. Development of Solar Technologies	There are several villages within the ten regions of Ghana, which are far from the district capitals where the national electricity grid can be reached. Such villages are without electricity. The essence of this proposal is providing some of these villages with solar lighting, dryers, water pumps and other solar technologies. The project has a direct benefit of improving the lighting system for the community, expanded

	evening hours to complete work that requires light, extra study time for students and it would have health, educational and social impact by affording them the opportunity to tune in to radio stations. This project can be replicated in many villages in Ghana, representing around 50 percent of the households in Ghana particularly those in the rural areas The baseline is use of fuel wood and charcoal for cooking kerosene for lighting and light crude oil for the thermal plant.
5. Energy Efficient Cooking Stoves and Lighting	The project would encourage private sector production of energy efficient cooking stoves and lighting for use at the household unit. The Ministry of Energy in 1989 produced and disseminated 30,000 Improved Cook stoves and 5,000 Sawdust stoves all sold in the urban areas. This can replicated in other parts of the country, especially in rural areas. The major benefit of the project is that it will provide employment for the private producers at the local and national level. The baseline is the use of fuel wood and charcoal for cooking and kerosene for lighting.
6. Biomass Plantation for charcoal Production	This project would establish a sustainable biomass plantation in the semi-deciduous forest zone of Ghana and also reforest deforested areas in this zone. The established plantation would be used to produce charcoal for the rural population. The benefit of the project is that it would assist provide sustainable employment for charcoal producers, provide reliable supply of income and improving their living conditions. Moreover, there would be increased reliability of energy supply and decrease pressure on biomass resources. The baseline is use of fuel wood for cooking and kerosene for lighting. About 69% of the populace in Ghana depends on fuel wood and charcoal for domestic cooking
7. Transition Zone Forestry Regeneration	Sustainably managed forest would be established and will produce biofuels and supply sustainably harvested biomass for the local communities in the transitional belt. The benefit of the project would be the production of oil and energy. This would provide employment to the community members and also provide income in the form of wages. Most of the lands in these areas are degraded and need to be reforested. Ghana has between 400,000 hectares – 600,000 hectares degraded lands.
8. Inter-City alcohol fuel trains	The proposed project would upgrade already existing railways in the Accra-Kumasi-Takoradi region in the short term and lay new lines to remote farming communities in the country in the long term. The benefit of the project is that farming communities would have access to easy transportation for marketing their own produce, thus getting the money's worth for they labour. Currently, there are middlemen who buy the produce from farming communities cheaply and sell them at much higher prices in the urban centres. The alcohol for the operation of this project will come from the sugar cane plantation The baseline is use of private cars, trotro, taxi's and the use existing diesel fuelled trains

	This project would assist in providing employment for the youth in the communities and easy access, thus providing income and investment in the community. This would go a long way to improve the local economy.
9. Intra-City electric Trains	The project would be upgrading the Accra-Tema suburban railway system and the single track at graphic road and Nsawam to an electric system. This would ease the heavy traffic congestion in this capital city. The advantage of the project is that affordable transport would be provided to the urban poor, rural communities close to Accra and Tema would have readily and affordable transport to convey their products/produce to the market. Also, the mass transit would help convey workers to work thus will reduce the number of private cars on the road and the carbon emissions they generate. Involves the setting up of rapid, frequent service by electric Trains between Central Accra and Dome, on a double track (compared to the existing single track) as far as Achimota, while maintaining the existing service between Accra and Nsawam.It involves the establishment of six new stations, and the Tema branch The baseline is use of private cars, trotro, taxi's and diesel fuelled trains
10. Bio fuel production	The proposed project would establish energy crop plantations and also revamp two sugar-cane factories in the country .The expected output is the production of liquid fuel such as alcohol, castor oil and Jatropha oil for use in industry, homes and road vehicles. The project would provide employment and improve income for the communities, helping to redress the rural-urban migration since the youth will have job openings in their locality. The project increases and provides reliable energy for the country. It improves the range of farming options for farmers. One significant benefit that can be derived from the sugar-cane plantation is the production of sugar and molasses for the populace thus save hard foreign currency used in importing sugar. An average plantation size between 5-50 hectares can be established in the 10 regions of Ghana.

Appendix C1.4: Scoping of project benefits

Projects	Primary (direct) benefits	Secondary (indirect) benefits	Empowerment
1. Wind Power generation along the coastal belt - electrification of communities	?? Increased diversification of energy supply ?? Increased reliability of energy supply ?? Increased supply of electricity for previously unelectrified communities ?? Increased time savings for women in their search for unreliable energy sources. ?? Decreased pressure on biomass resources with implications on soil fertility, water catchment efficiency	?? Improve access to education - will supply constant electric power, which will benefit the adult educational programme. ?? Increase productivity - power would be used to process agricultural produce; ?? Increase reliability of health services - hospitals/clinic will have reliable source of power for their operations and refrigeration ?? Increase access to the media and information (through radio, FM Stations, etc) ?? Assists in the creation of enabling environments for agricultural and non-agricultural businesses through supply of electricity to villages and/or increased reliability of electricity ?? Increased productivity of women could have a knock on effect on children's' participation in education	✍ Improve people's participation in decision-making after days work ✍ Frees women's time
2. Wood residues for Co-generation	?? Increased diversification of electricity supply ?? Increased reliability of electricity supply ?? Employment for both skilled and unskilled labour	?? Assists in the creation of enabling environments for businesses due to increased national reliability of electricity supply	

	?? Increased income and savings		
3. Mini-Hydro Electrification projects at Likpe-Kukurantumi,	?? Increased diversification of energy supply ?? Increased reliability of energy supply ?? Increased supply of electricity for previously unelectrified communities; ?? Increased time savings for women in their search for unreliable energy sources. ?? Decreased pressure on biomass resources with implications on soil fertility, water catchment efficiency ?? Increase reliability of health services -hospitals/clinic will have reliable source of power for their operations and refrigeration	?? Improve access to education - will supply constant electric power, which will benefit the adult educational programme. ?? Increase productivity - power would be used to process agricultural produce; ?? Increase access to the media and information (through radio, FM Stations, etc) ?? Assists in the creation of enabling environments for agricultural and non-agricultural businesses through supply of electricity to villages and/or increased reliability of electricity ?? Increased productivity of women could have a knock on effect on children's' participation in education	?? Increases the participation of the target population in decision making ?? Promotes community resource ownership ?? Frees women's time
4. Solar technologies (Home systems, Water Heaters, Water Pumps, Water Treatment, Dryers for Agriculture, etc.)	?? Increased diversification of energy supply ?? Increased reliability of energy supply; ?? Increased supply of electricity for previously unelectrified communities ?? Increases in productivity levels for agricultural produce, with associated increases in income; ?? Increased time savings for women	?? Increased supply of education eg, the adult educational programmes and parents helping their children with school assignments. ?? Improved supply of health services which have increased reliable sources of power ?? Can increase access to information through media ?? Increased productivity of women ?? Increased productivity of women	?? Increases the participation of the target population in decision making ?? Promotes participation in decision making by small scale producers ?? Strengthens agricultural groups (organise meetings in the night to talk about ways to stabilie prices for their produce and also increase production.) ?? Frees women's time

	in water collection ?? Increased access to potable water which lead to improvements in water quality and thus health	could have a knock-on effect on children's' participation in education ?? Increased skills and employment in support services and maintenance	?? Promotes community resource ownership
5. Energy Efficiency Cooking Stoves and Lighting	?? Increased reliability of energy supply ?? Provide employment and income to entrepreneurs who would be producing the stoves ?? Decreased pressure on biomass resources with implications on soil fertility, water catchment efficiency; ?? Increased time savings for women ?? Help improve the health of rural communities (smoke from firewood).	?? Increased productivity of women ?? Increased productivity of women could have a knock-on effect on children's' participation in education.	?? Increases the participation of the target population in decision making ?? Frees women's time
6. Reforestation and production of sustainably harvested biomass	?? Increased reliability of energy supply ?? Provide direct employment to more people in the charcoal industry; ?? An increase in productivity of the existing activities; ?? Decreased pressure on biomass resources with implications on flora and fauna ?? Increases in income and savings ?? Diversifies farmers out of subsistence farming into productive uses	?? Increases in access to credit	?? Increases the participation of the target population in decision making ?? Promotes participation in decision making by small scale producers ?? Strengthens agricultural groups

7. Transition Zone Forestry Regeneration	?? Reduce pressure on biomass resources ?? Provide employment in the rural communities ?? Increased income for rural communities ?? Improve the harsh climatic conditions (reduce temperatures and encourage rainfall) ?? Degraded lands would be reclaimed for farming activities ?? Supply of medicinal plant for industrial medicine. ?? Supply wood for energy	?? Improve the educational level of children	?? Enhance their purchasing power and level of education.
8. Inter – City Alcohol trains//bus services	?? Increased supply and reliability of transport; ?? Increase access to markets in urban centres for farmers ?? Increase returns to labour - increases access to income and savings ?? Increased productivity levels from time savings from avoiding walking long distances to markets ?? Increased demand for local sugar cane production	?? Improved access to education for some rural communities (students would easily enrol at school outside their community); ?? Improved supply of health services ?? Improved access to credit and savings ?? Assists in the creation of enabling environments for agricultural and non-agricultural businesses ?? Increased productivity could have a knock-on effect on children's' participation in education ?? Increased job security for sugar cane production and possible expansion of sector	?? Increases the participation of the target population in decision making ?? Promotes participation in decision making by small scale producers ?? Strengthens agricultural groups ?? Rural folks would be innovative

9. Intra – City electric trains	?? Improve accessibility of workers in the urban areas; ?? Increase time savings in travel through reduction in traffic congestion ?? Improve health impacts of reduced traffic emissions ?? Provide reliable and affordable transport to the urban poor and rural communities very close to the urban centres. ?? Help reduce rural-urban migration, since easy access would help people to move from one place to another easily to work and return	?? Increased investment levels; ?? Improve access to education; ?? Improve supply of and access to health services ?? Open the economy ?? Increased enabling environment for investment	?? Increases the participation of the target population in decision making
10 Production of liquid fuel from energy crop plantations (Jatropha, oil palm, castor oil, sugar cane)	✍ Increase biomass coverage, with positive implications on soil fertility and soil texture ✍ Increased level of skills among agricultural labour ✍ Diversifies farmers out of subsistence farming to more productive uses ✍ Provide employment and improve incomes to farmers growing this crops ✍ Sugar and molasses would also be produced at the sugar growing areas.	✍ Increased diversification of energy supply ✍ Increased reliability of energy supply ✍ Increases access to income and credit for agricultural communities. ✍ Increased access to credit ✍ Assists in the creation of enabling environments for businesses through the supply of fuel for vehicles ✍ Increased availability of transport ✍ Replacement of fossil fuels with biofuel will reduce imports of fossil fuels; ✍ Replacement of fossil fuels with biofuel will reduce traffic pollution in cities;	✍ Increases the participation of the target population in decision making ✍ Promotes participation in decision making by small scale producers ✍ Strengthens agricultural groups ✍ Promotes community resource ownership ✍ Promotes dialogue between regional government and micro-actors

Appendix C1.5: Actors and Institutions

Government

The main Government institutions responsible for CDM and climate change related issues in Ghana include:

- Ministry of Energy
- Ministry of Environment, Science and Technology
- Environmental Protection Agency (EPA)
- Ministry of Finance (MOF)
- Ministry of Lands, Mines and Forestry
- Ministry of Food and Agriculture
- Ministry of Transport and Communications
- Ministry of Trade and Industries
- Ministry of Economic Planning and Regional Integration
- National Development Planning Commission

Functions of Institutions

Ministry of Energy

The Ministry of Mines & Energy under its energy sector reform programme introduced the Energy Sector Development Programme (ESDP) in 1996 and enacted the relevant legislations including the Public Utilities Regulatory Commission Act, 1997 (Act 538) and Energy Commission Act 1997 (Act 541). The ESDP under the current Ministry of Energy sets the framework for meeting the country's energy requirements for sustained growth and development and the goals of the energy sector are:

- to restore improved productivity and efficiency in the procurement, transformation, distribution and use of all energy resources;
- to reduce the country's vulnerability to short-term disruptions in the energy resources and supply bases;
- to consolidate and further accelerate the development and use of the country's indigenous energy sources, especially woodfuels, hydro-power, petroleum and solar energy, and
- to secure future power supply through thermal complementation of the hydro-based electricity generation.

The programmes and projects being implemented by the Ministry of Energy and energy sector institutions may be classified under the following five broad areas:

1. The Renewable Energy Development Programme (REDP);
2. The National Liquefied Petroleum Gas (LPG) Promotion Programme;
3. The Power (Electricity) sub-sector;
4. The Petroleum sub-sector;
5. The Energy Efficiency & Conservation Programme

The Ministry of Energy is a member of the National Climate Change Committee (NCCC).

Ministry of Environment, Science and Technology

The Ministry of Environment, Science and Technology is the Global Environment Facility (GEF) National Focal Point. The Ministry among others represents the country at the COP/MOP (Conference of Parties and Meeting of Parties) and formulates national policy on climate change issues with technical support of the Environmental Protection Agency (EPA).

Environmental Protection Agency (EPA)

The Environmental Protection Agency is the Implementing Institution for the coordination of the implementation of policy and projects on climate change and the CDM. The agency has therefore been collaborating and coordinating multilateral and bilateral climate change capacity building projects. Accordingly, the Agency has two climate change units in the Conventions and Projects Implementation Department (CPID), namely National Communication Coordination Unit, and Clean Development Mechanism (CDM) Project Coordination Unit.

In addition, the EPA has also coordinated climate change vulnerability and adaptation studies on the country's coastal zone, water resources, and agriculture. The Study was carried out under the Netherlands Government Climate Change Program. The Netherlands Government provided the Technical and Financial Assistance for the country studies.

Ministry of Finance (MOF)

The MOF is a member of the National Climate Change Committee (NCCC).

Ministry of Lands, Mines and Forestry

The Ministry of Lands, Mines and Forestry is charged with the responsibility to provide policy guidelines and implement measures in the forestry sector aimed at ensuring sustainable management of existing forest resources and strategies to increase forest cover. In addition, the ministry formulates policies and guidelines for Land Use Change and Forestry sectors. The Ministry is a member of the National Climate Change Committee (NCCC).

Ministry of Food and Agriculture

The Ministry of Food and Agriculture is a member of the National Climate Change Committee (NCCC) and plays very important role in CDM projects and activities in Ghana. The ministry has a very high level of knowledge and information about CDM. The ministry participated in the Climate Change Vulnerability and Adaptation studies on the country's coastal zone, water resources, and Agriculture coordinated by the EPA with funding and technical assistance from the Netherlands Government.

Ministry of Transport and Communications

The Ministry of Transport and Communications is a member of the National Climate Change Committee (NCCC) and plays very important role in CDM projects and activities in Ghana. The Ministry is considering projects such as reduction of exhaust emissions, improvement in the railway network to also reduce exhaust emissions and vehicular transport and road accidents.

Ministry of Trade and Industries

The Ministry of Trade and Industries is an active participant in the activities of the National Climate Change Committee (NCCC). It is well informed about the CDM and the Climate change agenda. Owing to the fact that the ministry caters for industry and trade policies/issues of technology transfer which are very relevant for CDM are discussed by the ministry. In this respect, it is a suitable ally for promoting CDM activities

Ministry of Economic Planning and Regional Integration

The Ministry of Economic planning and Regional Integration is charge with the responsibility of economic planning and regional integration and cooperation. The NDPC is located in this ministry and is at the apex of the development planning process. The ministry also seeks to forge regional cooperation and integration especially of the West Africa sub-region. The proposed West African Gas Pipeline project is one project, which is expected to make major contribution to the Ghanaian energy sector and the economy as a whole. The ministry is playing vital role in the negotiation of the agreement at the regional and international level.

National Development Planning Commission (NDPC)

The NDPC is at the apex of the planning machinery in the country and has responsibility for coordinating and harmonizing sector plans from the ministries, departments and agencies (MDAs) and district plans from the District Assemblies into a comprehensive, integrated and broad national plan. The NDPC is assisted in the development planning process by Cross-Sectoral planning Groups (CSPGs) representing stakeholders in the national development process, including sector ministries, agencies, district assemblies, academic and research institutions, small-scale and large-scale business operators traditional rulers and non-governmental organizations (NGOs).

Potential allies for promoting CDM

National Climate Change Committee

The National Climate Change Committee (NCCC), is coordinated by the Ministry of Environment, Science & Technology (MEST) involves many departments. Other national stakeholders also get involved. The full list of membership include:

- Ministry of Finance (MOF)
- Ministry of Lands, Mines and Forestry
- Ministry of Food and Agriculture
- Ministry of Environment, Science and Technology
- Ministry of Transport and Communications
- Ministry of Trade and Industries
- Environmental Protection Agency (EPA)
- Ministry of Energy
- Ministry of Economic Planning and Regional Integration
- National Development Planning Commission
- Ministry of Local Government and Rural Development
- Ministry of Manpower and Employment
- Ministry of Works and Housing
- National Board for Small Scale Industries (NBSSI)

- Ghana Statistical Service
- Volta River Authority

Business Groups

Various investor groups business/trade associations or networks have been surveyed to assess their knowledge and involvement of CDM activities/issues. Below is a list though not exhaustive, of trade associations, business groups, etc; who are stakeholders in the CDM agenda.

Association of Ghana Industries (AGI)

The Association of Ghana Industries (AGI) is an advocacy organization for industries in Ghana and provides consultancy services and training for its members. Membership includes large, medium and small-scale industries in all sectors of the Ghanaian economy. The AGI has about 1500 members on its roll.

Federation of Associations of Ghanaian Exporters (FAGE)

The Federation of Associations of Ghanaian Exporters (FAGE) is an umbrella organization for about 16 export-oriented associations. The different associations are involved in the export of non-traditional export commodities.[7] The non-traditional export commodities include: fresh vegetable, pineapples, handicrafts (carvings, baskets, beads, etc), shea butter, cashew nuts, etc.

Private Enterprise Foundation (PEF)

The Private Enterprise Foundation is a private sector initiative to create an enabling environment for the growth of the private sector and to provide advocacy and advisory services for the private sector. The AGI, FAGE and Association of Financial Institutions (banking and non-banking financial institutions) provide financial support for the PEF.

Ghana Union of Traders Association (GUTA)

The Ghana Union of Traders Association is the umbrella association for all categories of traders, which include spare parts dealers, traders in general, merchandise and importers of general goods.

Ghana Institution of Engineers (GhIE)

The Ghana Institution of Engineers is the umbrella organization for all fields of professional engineering in Ghana.

Petroleum Processing and Marketing Sector Companies

Petroleum Processing and Marketing Sector Companies comprise of all petroleum-marketing companies, petroleum refineries, lubricating oil manufacturing plants and bulk oil storage and transport companies.

Other trade associations/business institutions whose activities/operations may have implications for implementing CDM activities may include:

- Ghana Association of Consultants
- Ghana Chamber of Commerce and Industry

[7] Non-traditional export commodity is any commodity other than Ghana's traditional export commodity such as cocoa, timber, gold, coffee, bauxite, manganese, diamond.

- Association of Small Scale Industries (ASSI)
- Farmers Council
- Ghana Association of women Entrepreneurs
- Ghana Executive Services Organization

Non-Governmental Organizations (NGOs)

There are about 150 registered international and local NGOs in Ghana and they have varied areas of interest and specialization. The type of services provide by the NGOs encompass:

- Technical and Skill training
- Management and Entrepreneurship training
- Technology transfer
- Project funding
- Project Design and management
- Advisory and Counseling Services
- Financial services (operation of credit lines)
- Product Development

Research Institutions

The organisations involved in research activities that may be relevant to CDM and the climate change agenda are mainly associated with the universities or the Council for Scientific and Industrial Research (CSIR). The CSIR has 14 institutes, which carry out research in various fields including forestry, soil science, animal science industrial research/development, food and nutrition, water and hydrology.

Poverty-oriented organisations

The groups primarily responsible for working with poverty alleviation are as follows:

National Poverty Reduction Programme (NPRP)

The NPRP is primarily responsible for reducing the incidence and levels of poverty in Ghana. The NPRP is a package of interventions identified by the Government of Ghana in consultation with the UNDP aimed at improving the living standards of the poor in the Ghanaian society. The goal of the programme is to empower the poor to reduce their own poverty levels by identifying their needs, defining how the needs can best be addressed and then implementing activities to meet those needs.

At the policy level, Ministry of Finance (MOF), Ministry of Local Government and Rural Development (MLGRD) and National Development Planning Commission (NDPC) as Central Management Agencies (CMAs), and the Ministry of Economic Planning and Regional Integration play leading/coordinating roles in the poverty alleviation/reduction agenda.

Ministry of Local Government and Rural Development (MLGRD)

The MLGRD is responsible for monitoring poverty reduction activities at the district and sub-district levels and coordinate the performance of these activities.

National Development Planning Commission (NDPC)

The NDPC is responsible for the formulation of macro-economic policies and the national development-planning framework, which inter alia plays the following roles:

- prepares guidelines for the development of sectoral strategies and implementation of programmes and projects.
- coordinates poverty reduction activities 'dispersed' sectorally through a number of agencies and involving NGOs and donor agencies.
- monitors and evaluates the performance of programme activities in collaboration with MLGRD and Ministry of Manpower and Employment (MME)
- ensures that the projects implemented under the NPRP are consistent with government macro-economic policies and sectoral strategies and fit within the national development planning framework.

Under the ongoing pilot programme of the NPRP, the five district assemblies are the implementing agencies at the district level.

Sub-District Level: Community Level and Self-Help Initiatives

Sub-metropolitan and sub-district agencies like town/area councils and unit communities are responsible for poverty reduction planning for community initiatives and prioritized projects.

Indigenous and Traditional Institutions

Indigenous and traditional institutions play a role in assisting their members to cope with poverty. Traditional authorities, clans village associations, informal local financial organs '(such as traditional money lenders and 'susu' saving/lending groups) play a very important role in providing access to assets (such as land, credit), natural resources management (forests, wetlands) and infrastructure development at the community/local level.

Non-Governmental Organizations (NGOs)

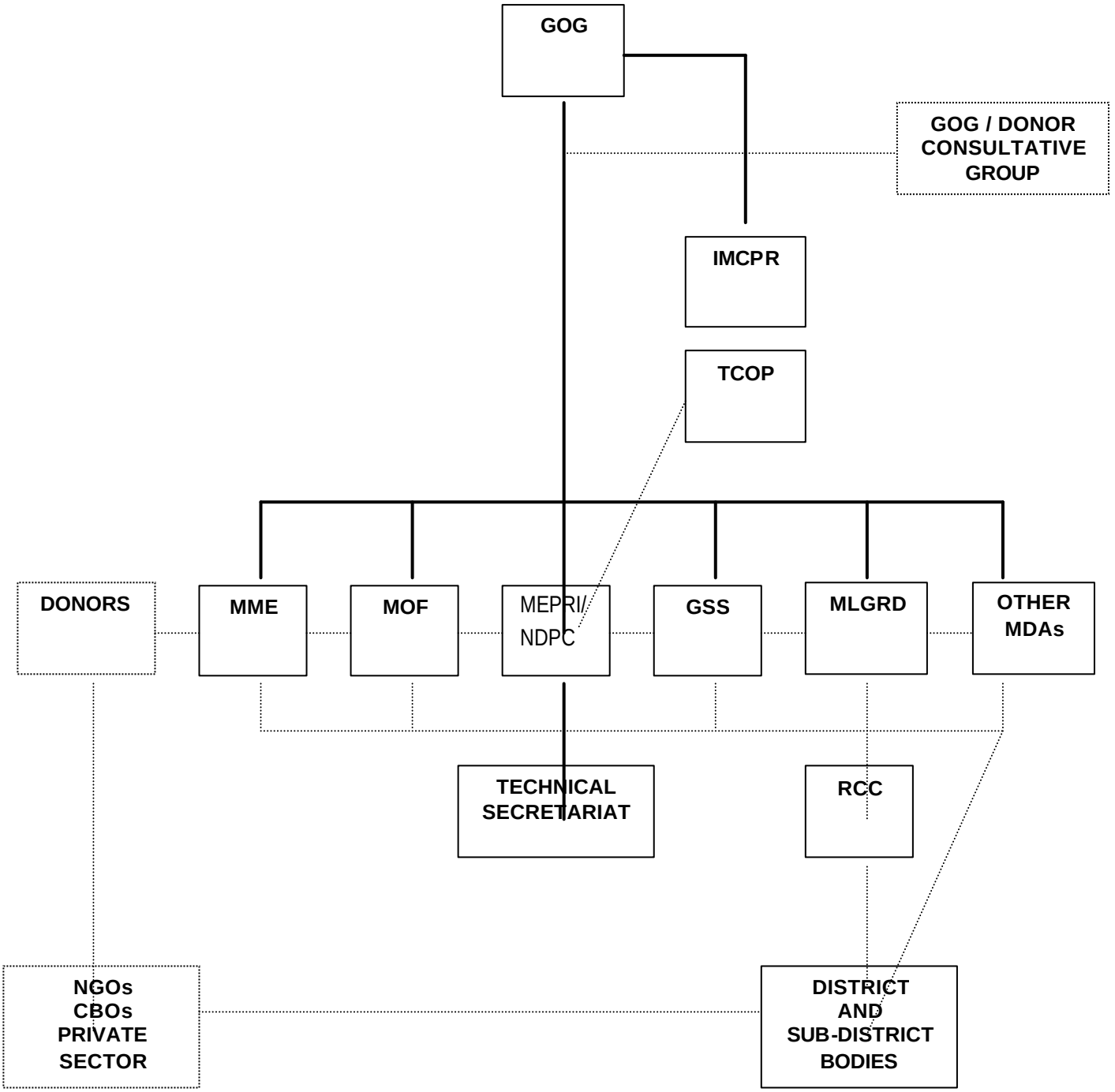
As at January 2000 there were about 30 international NGOs/multilateral organizations[8] involved in one poverty reduction activity/programme or another. The areas of activities include: technical and skills training, financial services (i.e. operation of credit line), advisory service, project design and management, water and sanitation – provision of potable water, income generation activities, women development, etc.

The National Poverty Reduction Programme (NPRP) in a survey identified about 40 local NGOs as organizations whose activities directly or indirectly contribute to poverty reduction/alleviation[1]. This category of organizations includes Catholic Action for Street Children, Center for the Development of People (CEDEP), Young Women's Christian Association, Community Life Improvement Programme, ENOWID Foundation, International Federation of Women (FIDA), Integrated Social Development

[8] Resource Guide A Directory of Resource Institutions in Poverty Reduction, Published by UNDP-Government of Ghana Poverty Reduction Programme, January 2000.

Centre (ISODEC), Poverty Reduction and Ecological Protection in Rural Areas and Opportunities Industrialization Centre Ghana.

ORGANISATIONAL STRUCTURE FOR POVERTY REDUCTION ACTIVITIES



KEY

Chain of Command _____

Functional Links .....

Level of awareness on CDM these Actors and Institutions

Unfortunately, majority of the actors and institutions mentioned have little knowledge of CDM. The training programmes organized so far targeted the large–scale industries and participants from some government organizations. There is therefore the need to do more awareness raising on climate Change in general and CDM among these listed actors and institutions and the populace.

Human resource capacity building needs

There is not enough capacity for:

- monitoring and evaluation of projects;
- certification of projects;
- verification and validation of CDM projects
- development of CDM projects
- baseline determination;
- mitigation cost analysis and assessment/carbon analysis
- CDM project management
- negotiation skills.

Institutional capacity building needs

The UNFCCC focal point, MEST does not have the institutional capacity to effectively participate in the CDM. There is lack of systems procedures and methodologies for certification, validation of CDM projects. There is no CDM office to coordinate all CDM activities in the country.

CDM project development should be incorporated into poverty reduction programmes in the planning and development of projects in the District Assemblies. There should be clear-cut policy guidelines and framework for the inclusion of CDM and poverty reduction/alleviation project or programmes in the District Assemblies' Development Plans for sustainable development.

Capacity needs for actors and institutions involved in the supply of developed oriented projects.

Stages of the project cycle	**Identification of current actors & Institutions**	**Identification of actors and institutions who should be involved**	**Capacity needs (training of existing or new actors, awareness raising workshops, courses, etc.)**	**Who should provide this capacity**	**Policy recommendation**
Initiation	EPA, MEST, MOE, MOFA, NDPC, NPRP, Research Institutions, Energy Foundation, KITE, other NGO's, Private sector – Industry, MTI	EPA, MEST, MOE, MOFA, NDPC, NPRP, Research Institutions, Energy Foundation, KITE, other NGO's, Private sector – Industry, MLGRD,	Project scoping & selection, project conceptuatlization & design, awareness raising & communication	EPA, MEST, MOE, MOFA, NDPC, UNFCCC focal point Development partners – bilateral/multilateral, NGO	Industry, NDPC, NPRP, Research Institutions, Energy Foundation, KITE, other NGO's, Private sector – Industry, MTI should initiate CDM projects with povert reduction component
Packaging	EPA, UNFCCC Focal Point, MEST, MOE, EF, KITE, MOFA, MLMF,	EPA, UNFCCC Focal Point, MEST, MOE, EF, KITE, MOFA, MLMF	Investment appraisal, Project appraisal	EPA, MEST Development partners – bilateral/multilateral,	Poverty reduction & sustainable dev't should be factored into projects. Investment incentives should cover all CDM projects to reduce transaction cost
Approval	EPA, UNFCCC Focal Point, MEST, MOE	EPA, UNFCCC Focal Point, MEST, MOE, MLMF, Private sector, NDPC, MLGRD, Financial institutions	Validation, evaluation, project design, project appraisal – using CDM criteria eg. additionality,	EPA, MEST UNFCCC Focal point, NDPC, MOE, MLMF,	Approval and project review should be fast-tracked to reduce transaction cost

			environment, sustainability etc		
Management	EPA, UNFCCC Focal Point, MEST, MOFA, MOE	Private sector, NDPC, MLGRD, EPA UNFCCC Focal Point, MOE, MTI, MTC, NGO	Project management, monitoring & evaluation, project implementation, Negotiation skills	EPA, MEST, Private sector, NGO, Development partners – bilateral/multilateral	EPA and UNFCCC focal point must play active role in project management and monitoring/evaluation
CER Sales	EPA, UNFCCC Focal Point, MEST Private sector,	EPA, UNFCCC Focal Point, MEST, Financial/Investment institutions Private sector,	Carbon analysis, verification, baseline estimation, financial & investment analysis Negotiation skills, trading in CERs, Laws and regulations in CERs trading	EPA, MEST, Private sector, NGO, Development partners – bilateral/multilateral	Trading in CERs regulations and laws to be enacted quickly,