



# FORESTRY COMMISSION OF GHANA

MINISTRY OF LANDS AND NATURAL RESOURCES

Republic of Ghana

## REDD+ MECHANISM IN GHANA

### Strategic Environmental and Social Assessment (SESA)

#### UPDATED SESA REPORT

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## ACRONYMS AND ABBREVIATIONS

AfDB	African Development Bank
AFD	French Development Agency (Agence Française de Développement)
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CFC	Collaborative Forest Committee
CIF	Climate Investment Funds
COCOBOD	Ghana Cocoa Board
COP	Conference of the Parties to the UNFCCC (the parent treaty to the Kyoto Protocol)
CREMA	Community Resource Management Area
CRIG	Cocoa Research Institute of Ghana
CSIR	Council for Scientific and Industrial Research
CSOs	Civil Society Organisation(s)
CSSVDCU	Cocoa Swollen Shoot Virus Disease Control unit
DAs	District Assemblies
DFID	Department for International Development (UK)
DGM	Dedicated Grant Mechanism for Indigenous People and Local Communities
DOLTA	Domestic Lumber Traders Association
EIA	Environmental Impact Assessment
EPA	Environmental Protection Agency, Ghana
ESIA	Environmental and Social Impact Assessment
ELCIR+	Engaging Local Communities in REDD+
ESMP	Environmental and Social Management Plan
EU	European Union
FAO	Food and Agriculture Organisation
FASDEP	Food and Agricultural Sector Development Policy
FAWAG	Furniture and Wood Workers Association of Ghana
FC	Forestry Commission
FCPF	Forest Carbon Partnership Facility
FDMP	Forest Development Master Plan
FIP	Forest Investment Programme
FLEGT	Forest Law Enforcement, Governance and Trade
FORIG	Forestry Research Institute of Ghana
FSC	Forest Social Certification
FSD	Forest Services Division
FWP	Forest and Wildlife Policy
GDP	Gross Domestic Product
GEF	Global Environment Facility
GFTN	Global Forest and Trade Network (WB/WWF)
GHG	Green House Gas
GIDA	Ghana Irrigation Development Authority
GIS	Global Information System
GIZ	German Development Agency
GoG	Government of Ghana
GNFS	Ghana National Fire Service
GPRS I	Ghana Poverty Reduction Strategy
GPRS II	Growth and Poverty Reduction Strategy
GSBA	Globally Significant Biodiversity Areas
GTA	Ghana Timber Association

GTMO	Ghana Timber Millers Organisation
ha	hectare
HFZ	High Forest Zone
IFC	International Finance Corporation
ITTO	International Timber Trade Organisation
IUCN	International Union for Conservation of Nature
JICA	Japan International Cooperation Agency
KNUST	Kwame Nkrumah University of Science & Technology
LI	Legislative Instrument
LVD	Land Valuation Division
LULUCF	Land use, Land Use Change and Forestry
MC	Minerals Commission
MDBs	Multilateral Development Banks
M&E	Monitoring and Evaluation
MESTI	Ministry of Environment Science Technology and Innovation
MLGRD	Ministry of Local Government and Rural Development
MLNR	Ministry of Lands and Natural Resources
MoF	Ministry of Finance
MoFA	Ministry of Food and Agriculture
MRV	Monitoring Reporting and Verification
MW	mega watts
NCRC	Nature Conservation Research Center
NGOs	Non-Governmental Organisations
NREG	Natural Resources and Environmental Governance
NFF	National Forest Forum
NRCD	National Redemption Council Decree
NTFPs	Non Timber Forest Products
NTSC	National Tree Seed Centre
OASL	Office of the Administrator of Stool Lands
PNDC	Provisional National Defence Council
PNDCL	Provisional National Defence Council Law
PPRSD	Plant Protection and Regulatory Services Directorate of MoFA
PURC	Public Utilities and Regulatory Commission
REDD	Reducing Emissions from Deforestation and forest Degradation
REDD+	REDD plus sustainable management of forest, forest conservation, enhancement of carbon stocks
RMSC	Resource Management Support Centre
RoG	Republic of Ghana
R-PIN	REDD+ Project Idea Note
R-PP	Readiness Preparation Proposal
SEA	Strategic Environmental Assessment
SESA	Strategic Environmental and Social Assessment
SRI	Soil Resource Institute of Ghana
SRA	Social Responsibility Agreement
TAs	Traditional Authorities
TBI	Tropenbos International
TIDD	Timber Industry Development Division
ToR	Terms of Reference
TUC	Timber Utilization Contract
UENR	University of Energy and Natural Resources, Sunyani-Ghana

UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
VCS	Voluntary Carbon Standards
VER	Voluntary Emission Reduction
VPA	Voluntary Partnership Agreement
WB	World Bank
WD	Wildlife Division
WRC	Water Resources Commission



## EXECUTIVE SUMMARY

The SESA has been done with the aim of mainstreaming sustainable development principles into the REDD+ strategy options.

### Methodology/SESA Process

The methodology and approach for the SESA work can be described under 5 major steps as follows:

#### Step 1: Preparation

- Formation of a 6 member SESA Sub-working group at the Forestry Commission with members from both government and non-governmental organization including: Forestry Commission officials-Climate Change Unit; 1no. Environmental Protection Agency (EPA) official; Minerals Commission official; and Tropenbos International official.
- Development of ToR for SESA and selection of consultant through open tendering.
- SESA contract negotiation and signing in October 2013 for an 18-month SESA assignment.
- SESA consultant undertakes stakeholder gap analysis and prepares an Inception report with work plan for consideration by FC/SESA subworking group in November 2013.
- Series of meetings in November and December 2013 on SESA work plan to confirm stakeholders and to revise work plan from 18 months to 12 months ending December 2014.
  - ✓ SESA sub- working group meeting on 27 November 2013;
  - ✓ Meeting with other REDD+ consultants to ensure synergies in REDD+ consultancies on 09 December 2013; and
  - ✓ FC Project Implementation Committee meeting with REDD+ FCPF consultants on 18 December 2013.
- Meeting with FC/World Bank mission team in February 2014 to revise SESA Work Plan from 12 months to 10 months to meet World Bank calendar. World Bank mission team proposes case study on Ankasa-Krokosua-Bia forest corridor.
- SESA consultant mobilized in February 2014.
- SESA consultants invited to a multi-stakeholder workshops in Aburi and Accra to participate in the preparation of ER-PIN in February/March 2014.

#### Step 2: Scoping and Situation Assessment/Baseline Study

- Field consultations in 6 regions (Western, Central, Ashanti, Brong Ahafo, Northern and Upper East Regions) across the major ecological zones (high forest, transition and savanna zones) to engage key stakeholders (via personal interviews) and communities on REDD+ issues from March to June 2014.
- GIS expert visits to FC/RMSC to obtain data for GIS analysis and preparation of maps- March to May 2014.
  - Prepared base maps for Western and Brong Ahafo regions for FIP to benefit as well and base maps covered 1). Road Network, 2). District Boundary, 3). Forest Reserves, 4). River Basin, 5). Cocoa District Boundary, 6). Drainage Network, 7). Population 2010,
  - Prepared forest cover trends using 1990, 2000, & 2010 classified satellite image maps for selected forest reserves in the Ankasa-Krokosua-Bia corridor with communities within 5km buffer around the reserves also mapped.
- The SESA consultant procures data for spatial analysis and preparation of basemaps and landuse/land cover maps for the high forest zone to address World Bank comments (Ref. **Annex** on the 2014 SESA Report, June – July 2016).

- Field visits/case study by Biodiversity/forest expert to selected forest reserves in Ankasa-Krokosua corridor to ascertain deforestation/ degradation conditions (a form of ground truthing) and to classify condition of reserve as *almost extinct, partially extinct, poor, good, excellent* –March to May 2014
- Desktop review of key literature for environmental/social baseline information –March to August 2014
- Preparation and submission of Scoping Report by SESA Consultants – June -July 2014
- Validation of Scoping outcome
- Three regional workshops with participants from all ten regions organized from July to August 2014 to provide comments on scoping outcome:
  - Savanna zone workshop from 21<sup>st</sup> to 22<sup>nd</sup> July 2014 in Tamale for participants from Northern, Upper East and Upper West Regions
  - Middle belt or transition zone from 24<sup>th</sup> to 25<sup>th</sup> July in Kumasi for participants from Ashanti, Brong Ahafo, Eastern and Volta Regions
  - Southern or High Forest Zone from 31<sup>st</sup> July to 1<sup>st</sup> August 2014 in Takoradi for participants from Western, Central, and Gt. Accra

### Step 3: Assessment

- Three regional workshops were organised between 20<sup>th</sup> July and 2<sup>nd</sup> August, 2014 with participants drawn from all the ten regions of the country to carry out assessment using Ghana EPA SEA tools. The country was divided into three major belts for the regional workshops as follows:
  - Northern Belt, which comprises of the Northern Region, Upper East Region and Upper West Region, and was held in Tamale from 21<sup>st</sup> to 22<sup>nd</sup> July, 2014;
  - Middle Belt, which comprises of the Brong Ahafo, Ashanti, Eastern, and Volta Regions, and was held in Kumasi from 24<sup>th</sup> to 25<sup>th</sup> July, 2014; and
  - Southern Belt, which comprises of the Western, Central and Gt. Accra Regions, and was held in Takoradi from 31<sup>st</sup> July to 1<sup>st</sup> August, 2014.
- Three SEA tools applied for the assessment:
  - Internal Consistency/Compatibility matrix;
  - Compound matrix; and
  - Opportunity/Benefit and Risk matrix.

### Step 4: Indicators, Monitoring and Evaluation

Monitoring and Evaluation Proposal was prepared and included in the SESA report. The Proposal is aimed at ensuring that the identified potential environmental impacts/ risks caused by the adoption of the strategy options are efficiently monitored. An ESMF and RPF were prepared as separate documents to determine the likely environmental and social outcomes or impacts from the proposed strategy options and to provide relevant indicators for monitoring as well as roles, responsibilities and capacity building/ training requirements.

### Step 5: SESA Reporting, Learning and Communication

- Presentation of scoping report to multistakeholder group from all ten regions organized from July to August in three separate ecological zones to provide comments and suggestions.

- Presentation on Scoping Report & Progress of Work to SESA Sub-working group at the FC on 13<sup>th</sup> August, 2014 for comments and suggestions.
- Presentation on progress of work to World Bank mission team and other REDD+ consultants on September 9, 2014 at the Ghana office of the World Bank for comments and suggestions.
- Preparation and submission of SESA Summary Report to FC on 15<sup>th</sup> September 2014 for national stakeholder validation workshop.
- SESA National stakeholder validation workshop organized at FC on 18<sup>th</sup> September, 2014.
- Develop and submit draft SESA report with ESMF and RPF –30<sup>th</sup> September, 2014.
- Review of draft SESA, ESMF, RPF reports –by technical experts –first week in October, 2014.
- Finalisation and submission of final draft SESA, ESMF, RPF reports by SESA consultants – October 2014.
- Update of SESA reports (including ESMF, RPF) using World Bank comments (**Ref. Annex 9**), July - August 2016.

## **Proposed Strategy Options and key drivers of deforestation and forest degradation**

### Proposed Strategy Options

Below is a list of the proposed strategy options for addressing the identified drivers of deforestation/forest degradation, according to the R-PP:

- Improve the quality of multi-stakeholder dialogue and decision –making
- Clarify natural resource rights
- Improve forest law enforcement, governance and trade
- Address unsustainable timber harvesting by supporting sustainable supply of timber to meet export and domestic / regional timber demand
- Address problem of local market supply
- Mitigate effects of agricultural expansion (particularly cocoa in the HFZ)
- Strengthen local decentralised management of natural resources
- Improve sustainability of fuel wood use
- Improve quality of fire-affected forests and rangelands
- Address local market demand
- Improve returns to small-scale enterprise
- Improve regulation of mining activities to reduce forest degradation Rehabilitation of degraded forest reserves
- Implement actions to address acts of God (wind and natural fire events, floods, pests and diseases)

### Key drivers of deforestation and forest degradation

The key drivers of deforestation and forest degradation as fully discussed in the REDD+ Readiness Preparation Proposal are summarised below:

#### Policy drivers

- Imbalances of forest exploitation in favour of large scale timber industry
- Under priced goods and services
- Weak regulatory mechanisms and resource rights
- Weak law enforcement

#### Demographic drivers

- Population growth and urban expansion

- Slash and burn agricultural practices
- Economic drivers
- High international demand for primary products
- Low prices for lumber on the domestic market

#### Natural forces

- Wild fires
- Floods
- Pests and diseases

### **Sustainability Issues**

The SESA process was used to identify the likely environmental/social challenges or risks that need to be addressed to minimize adverse environmental/social impacts during project implementation and also to identify key issues that may arise as a result of the implementation of the strategy options. These concerns from the outcome of the scoping study are provided below.

#### Natural Resource Issues

- Protection of key river/ water bodies – develop buffer zones around key rivers into forest
- Soil and water quality concerns- from increasing agrochemical usage
- Soil fertility and farm erosion issues- promote agro forestry
- Resource wastage- during exploitation and use of timber
- Maintenance of young tree plantations- threats from livestock grazing especially during the dry seasons
- Lack of community/group woodlots, especially in the Savannah zones –promote community woodlots
- Promote tree crop plantations especially in the Transition and Savannah zones
- Encourage group/ individual and community woodlots especially in the Savannah areas
- Lack of community forests – promote community/stools forests/plantations
- Maintenance of forests, especially in the transition/savannah zones – threat from group hunters and alien herdsmen

#### Economic Issues

- Equity issues- benefit sharing in carbon trading
- Limited financial resources- hampering effective forest management
- Lack of valuation rates for timber species- LVD compensation rates limited to only annual and perennial crops and LVD rates needs periodic review
- Limited economic/ livelihood activities- esp. during the dry season in the savannah zones putting pressure on forest resources
- Some communities rejecting REDD- Uncertainties associated with economic benefits
- Long gestation periods for tree species/ native tree species (farmers not interested)
- The economic viability and benefits from carbon trading versus tree trading
- Upfront demands for funds to carry out REDD+ activities & donor flexibility
- Job creation opportunities and long term revenues for beneficiaries
- Lack of policy on carbon rights and payment for ecosystem/environmental services
- High cost of LPG (pressure on other energy sources)
- Economically, women are generally dependent on men because the men have the dominant access to and use of the main factor of production, land.

Socio-cultural

- Acquisition of large tracts of land for afforestation projects (peasant farmers at risk)
- Food security
- Admitted and illegal farms/ settlements in forest reserves- compatibility with forest conservation principles
- Compensation arrangements- increasing shade trees in existing cocoa farms
- Lack of royalty payments – from Game/ wildlife reserves/ parks and GSBA's to traditional authorities and landowners
- Lack of sustainable alternative livelihood schemes- Persons/ farmers/ communities heavily dependent on forest resources
- Women access and right to tenure and ownership of land and natural resources - Challenges due to cultural, traditional norms and customs
- Customary land acquisition and conflicts
- Communities rejecting REDD+ due to technicalities/complexities/uncertainties/ unmet expectations, previous projects completion issues
- Competition and demand for off-reserve lands (peasant farmers at risk)
- Women's multiple roles in the household, in production and reproduction limit their free time to engage effectively in other social and economic ventures/activities

Institutional

- Weak law enforcement –inability of FC/FSD/government to halt illegal farming in FRs
- Conflicting policies -forestry, cocoa and mineral/mining sectors
- Tree tenure rights- reform law to enable tenant farmers benefit from naturally occurring trees on their farms during period of occupation
- Lack of policy on carbon rights and payment for ecosystem/environmental services
- Security of Land tenure and ownership
- Inadequate bye laws at district/ community level- Bush fires, group hunting and cutting of wild economic trees such as shea trees
- Institutional capacity for monitoring, data storage/management (FC)
- Off reserves management challenges- Community/ traditional authority role not clearly defined.
- Lack of land use plan for Ghana
- Change in government leading to change in policy direction
- Frequent adjournment of forest cases in court and low penalties for offenders
- Ineffective collaboration among key government institutions-e.g. FC/COCOBOD/MOFA /MC /MMDAs/GNFS etc
- Lack of Health and safety regulations in forest/plantation operation
- Lack of transparency at the institutional level during project implementation
- Misuse of power/conflict of interest by some traditional leaders and government officials in order to benefit from encroachment into FRs

**Recommendations**

The implementation of the proposed strategy interventions (options) for the REDD+ Mechanism in Ghana will offer a number of opportunities to local communities, landowners, and farmers which will improve their livelihoods. However, this must be done with greater consideration for sustainability. The opportunities and risks developed for the various strategy options is a key reference point for the appropriate enhancement and mitigation measures to be considered for the specific strategy intervention

to be implemented. The following recommendations are made for the sustainable implementation of the REDD+ Mechanism:

### ***Natural Resources***

#### Protection of water resources and adopting riparian buffer zones as REDD+ designated areas

In all the three regional workshops, development of buffer zones around key rivers/water bodies into forest was one of the top five priorities. It is recommended that buffer zones around selected key rivers be part of REDD+ designated areas while implementing the riparian buffer zone policy. This will involve enactment of bylaws, demarcation of boundaries, acquisition of buffer areas where necessary, provision of alternative livelihoods or relocating farmers beyond the buffer zones by supporting them through irrigation options and enforcement of buffer zones along selected water bodies. Stakeholders should agree on the key rivers to be selected. This will require collaboration among key institutions such as WRC, FC, EPA, MMDAs and TAs. Lessons should be learnt from the Sustainable Water and Lands Management Project coordinated by the EPA and implemented at the northern savanna eco-agricultural zone of the three northern regions (Northern, Upper East and Upper West Regions) of Ghana to improve this proposed intervention.

#### Promote Dedicated Forests/Community Forests and CREMAs under REDD+

Dedicated forests are designed to enable communities to manage their own forest 'reserves' based on approved management plans. These are in the form of patches of forests, sacred groves and secondary forests in off-reserve areas. A dedicated forest management scheme was initiated in 1994, under a pilot scheme, two communities were assisted to declare and manage Dedicated Forests (215 ha & 190 ha), in Fosu district. The results proved very positive, and draft legislation and a programme to promote dedicated forests were formulated in 1997, but no further action was taken.

It is recommended that dedicated forests or community forest concept be revisited and the suspended draft legislation modified to include benefits under REDD+ and pursued into law. The legal backing will ensure that chiefs or TAs cannot in themselves change the land use of such dedicated forests.

The concept of CREMAs appears to be gaining grounds in the communities around protected forests. Currently, there are about 27 CREMAs country-wide. It is recommended to promote the concept and formation of CREMAs under REDD+ to cover GSBAs.

#### Protected Reserves and Globally Significant Biodiversity Areas (GSBAs)

It is recommended that all protected reserves (with their CREMAs) and GSBAs be considered as REDD+ designated areas. This will enable the landowners, stool and local communities to benefit from carbon credits under REDD+ as a form of payment for environmental services. Currently, the TAs/stool/local communities do not enjoy any form of royalty payment from GSBAs because there is no timber exploitation allowed in these areas. This issue is of major concern to TAs whose jurisdiction cover GSBAs because their counterparts in charge of production FRs enjoy royalty payments. Unlike protected reserves which are expected to be acquired by the State with appropriate compensation payment to land owners, it is not the case with production FRs and GSBAs.

### Preparation of Pest & Pesticide Management Plan (PPMP)

Climate change, trade liberalization, and agricultural intensification activities under REDD+ (e.g. irrigation farming, increased fertilizer and pesticides use, introduction of new crops and varieties, changes in land use and landscape etc.) could trigger the occurrence of new pest problems.

It is recommended that when REDD+ sub-component activities are finalized, a Pest & Pesticide Management Plan be prepared for REDD+. The plan should include arrangements for frequent pest risk surveillance and modalities for continuous updating of the existing pest list. The EPA and the PPRSD are currently the lead institutions in managing invasive alien species and should be key actors in the preparation of the PPMP for REDD+.

### ***Socio-cultural***

#### Partnerships with Traditional Authorities

The traditional authorities have a huge influence on forest reserve lands under their domain, land allocation for agricultural/ farming purposes, land-use and development in the country and are therefore very critical in the implementation of the REDD+ Mechanism. Conscious effort must be made to develop partnerships with them.

The 1974 Report of the Committee of Enquiry into the Grievances of Farmers being ejected from certain Forest Reserves (Manzan, Sukusuku, Bia Tawya, Bodi and Tano-Ehuro) in the Western Region (constituted in April 1974) concluded that some traditional authorities were involved in granting lands in forest reserves to farmers, most of whom were strangers/settler farmers; and also where there are disputes between traditional authorities/paramount chiefs, some chiefs illegally grant lands in such disputed areas to farmers presumably to establish their authority over these disputed lands.

Some traditional authorities/some members of the National House of Chiefs were involved during the preparation of the REDD+ Readiness Preparatory Proposal, and some traditional leaders also took part in meetings and workshops organized as part of the SESA process and made useful contributions. The meetings and interaction with the Traditional Authorities should be regularized and strengthened to ensure their total support for the REDD+ Mechanism.

A REDD+ caucus of chiefs for the cocoa landscape should be put in place for regular engagement, to solicit support for and promote the agricultural tenancy agreement under the LAP for the cocoa landscape, information dissemination on REDD+ and for advice. Alternatively, the FC could have regular engagement with the various Regional Houses of Chiefs especially within the cocoa landscape (e.g. Western, Eastern Ashanti, Brong Ahafo, Central and Volta Regions) on REDD+, solicit support for the agricultural tenancy agreement under LAP. The FC can support the formation of subcommittee on REDD at the Regional House of Chiefs level and also take advantage of their meetings to make presentations on REDD, disseminate information and solicit their input/support and advice among others.

#### Gender and Socially Exclusive/Vulnerable

##### *Gender affirmative action for REDD+ implementation structures*

Gender issues were raised, discussed and captured as part of the SESA in both the Scoping and SESA Reporting. A gender road map for REDD+ was developed in November 2011 with support from IUCN and FC. To address the possibility of gender discrimination against women and vulnerable groups, the



application of gender affirmative action should be mandatory in REDD+ programmes and structures. The benefit sharing structures, dispute resolution structures, implementation, M&E structures and MRV system should all have a gender officer or co-ordinator with a gender 'eye' as part of the teams. Furthermore, gender orientation and training should be given to FC frontline staff, district/regional FC officials, REDD+ Secretariat staff, and such gender orientation should also devolve to the TAs and community level as part of all REDD+ community engagement programmes to eliminate gender/social conflicts that could arise during REDD+ implementation.

#### *Special assistance/support to vulnerable groups/women*

Vulnerable groups (e.g. landless farmers, settler farmers without proper land documents, women (especially widows), physically challenged farmers etc should be identified and assisted. Vulnerable groups should be assisted with land documentation requirements and obtain legal title to lands. Competition and high demand for land in all the communities, promote encroachment on forest reserves for forest resources and products. Most rural women do not often have the financial means to expand or lease land for farming and will require some financial support to be able to access land for REDD+ projects. Co-ownership of land among spouses often bring conflict resulting in divorce and rancor. An MOU should be developed to cover co-ownership of land for REDD+ projects clearly indicating benefit sharing arrangements.

#### Protection of Culturally Sensitive Sites

The implementation of the REDD+ interventions should identify and protect culturally sensitive areas as prescribed in the Environmental Assessment Regulation 1999, LI 1652. Key culturally sensitive sites include cemeteries, shrines and sacred groves. Some of the measures that can be introduced may include:

- No relocation of key culturally sensitive sites in on-reserves or off-reserves under REDD+ interventions;
- Provision of access to communities/TAs to culturally sensitive sites in on-reserve as well as at off – reserve areas designated as REDD+;
- Support for and enhancement of identified/designated cultural heritage sites; and
- Monitoring to prevent encroachment and abuse of such areas.

#### Recognise and Manage Socio-cultural norms

Socio-cultural factors play vital roles in programme/project success or failure. It is indispensable therefore in land use and management. Those whose access to land is purely rooted in culture and inheritance are most likely to be hit by this. Therefore where family/clan lands are involved, the consultations should go beyond the stool/traditional authorities to the family level.

Cultural restrictions and traditional norms that do not ensure equity in land distribution and ownership with respect to gender need to be addressed in collaboration with respective traditional authorities especially in the savannah zone.

#### Food Security Implications under REDD+

Food security issues under REDD+ was one of the top five prioritized issues from the three regional workshops. The field consultations also revealed that the modified taungya system of rehabilitating forest reserves not only improved food production in the country during the period but also enhanced income of beneficiary farmers. It is recommended that the modified taungya system be used or adopted where appropriate for rehabilitation of forest reserves. Lessons should also be learnt from previous modified taungya system especially with regard to RMSC capacity, data storage and monitoring to improve the system.



It is also recommended that off-reserve tree plantation projects should have a specified percentage of land (i.e. out of the total area earmarked for the plantation project) to be dedicated to or put under food/crop cultivation. The percentage of land to be allocated for crop cultivation should be agreed upon by relevant stakeholders including MoFA, FC, NGOs. The sub-component activity of improving productivity of farmlands (under Mitigate effects of agricultural expansion (particularly cocoa in the HFZ)) be properly executed with the involvement of MoFA at the district and regional level to ensure success, which will go a long way to improve and increase food production.

### Illegal Farms/Settlements

In addressing illegal farms/settlements in Forest Reserves, varied approaches have to be adopted. For farms where mostly crops cultivated are of annual duration, the modified taungya system could be adopted, and this could improve local food production and security and management of the forest resources. For farms where mostly perennial crops are cultivated, a cut-off arrangement is required to prevent future expansion of the farm in the reserve. With regard to illegal settlements, the law should be enforced.

### ***Economic***

#### Sustainable Alternative Livelihoods for Communities heavily dependent on forest resources

Some alternative livelihood schemes were suggested during the field consultations and these include:

- Animal rearing: sheep, goats, etc
- Non-farm business: soap making, tie/dye, sewing/dressmaking etc
- Tree crop/fruit production- Mango, water melon (transition/savanna zones)
- Vegetable production – with irrigation support
- Vetifa grass for baskets leather works smock
- Irrigation farming- food crops
- Aquaculture
- Bee-keeping
- Tree seedlings cultivation for commercial purposes

There are some alternative livelihood projects ongoing in the forest fringe communities in the Western Region but consultations with local communities revealed that such projects were not properly monitored and the income derived from these projects were not sustainable. It is recommended that alternative livelihood projects to be implemented under REDD+ should include adequate monitoring mechanism to ensure that the objectives are achieved. Identification and inclusion of markets/consumption outlets for such projects should form part of the project concept. The alternative livelihood projects should especially target the lean/ dry seasons when farming activities are minimal or absent and should also be gender responsive.

It is recommended that tree crop /tree fruit production, woodlot production for commercial purposes as well as irrigation farming be seriously considered for transition/savanna zones as sustainable alternative livelihood scheme options.

For the HFZ farmers, no specific sustainable alternative livelihood schemes are recommended across board. However, as indicated earlier, markets, monitoring and ensuring returns to such small scale enterprises should be part of the planning arrangement of the scheme to ensure sustainability of such schemes or projects or schemes.

With regard to the provision of alternative livelihood schemes for illegal chain saw operators, the following are recommended:

- Support artisanal lumber/illegal chain saw operators with micro-credit for livelihood activities for income generation.
- Support artisanal lumber /illegal chain saw operators to go into tree plantation projects
- Reform law to implement artisanal milling on national level
- Train artisanal/illegal loggers into production and distribution of improved cook-stoves/fuels for carbon credits

Alternative means of addressing economic and livelihood activities in the transition and savannah zones is appropriate to discourage unwarranted use of forest resources.

#### Promote reliable, affordable and sustainable sources of energy and alternative cooking technologies

Under Strategic Option H (Improve sustainability of fuel wood use), the FC should collaborate with the Energy Commission under the REDD+ mechanism to promote affordable, reliable and sustainable sources of energy and alternative cooking technologies, e.g. clean cookstove technology, use of LPG gas for cooking, etc especially in the local communities in the transition and savannah ecological zones. This will reduce the use of charcoal and fuel wood as energy sources. It will reduce the time and effort of women directed to cooking or at the kitchen, with positive health impacts and saving their time for other productive purposes geared towards additional income generation, which will go a long way to improve family wellbeing and income.

The Government of Ghana /Ministry of Energy should ensure that the pricing of LPG gas for domestic usage (e.g. when the Ghana Gas Project is in full operation) should not be dependent on economic factors alone (e.g. cost of production, demand/supply or market forces etc) but environmental consideration should be factored). Most of the charcoal produced in the transition zone is transported to the south for use. Though the SESA did not conduct specific study into charcoal and LPG gas usage at household levels, it has become a common practice for people to buy charcoal in addition to gas, because of the issue of reliability and price of gas.

### ***Institutional***

#### SEA Capacity building/Training for FC REDD+ Secretariat & FC frontline staff

The SEA/SESA reports are living documents which should be used to guide further refinement and implementation of proposed REDD+ strategy interventions where necessary. As the whole concept of REDD+ is still evolving, new strategy options or revision of proposed strategy options are likely to emerge.

It is recommended that capacity building/training for key FC REDD+ Secretariat staff as well as FC frontline staff at the head office and regions in SEA principles be organised. This will also position the FC to be able to carry out basic SEA and sustainability appraisals for its policies/plans/programmes within the various divisions of the FC with the aim of mainstreaming environmental and social considerations at the policy or strategic level of decision making for the forestry sector of Ghana. In this way, the FC interventions will become more sustainable, environmentally friendly and socially acceptable. The Ghana EPA offers such SEA training programmes and has considerable experience and capacity to carry out such training if requested.

### Conduct of EIA/SIA for REDD+ Sub-projects

This SESA was done at a strategic level and therefore not meant to identify and address location and site specific environmental/social impacts. During the implementation of various specific interventions, specific individual project level assessments must be done to address site specific project impacts in accordance with LI 1652. Initial screening of subprojects using EPA Form EA 1 can be carried out to inform the Agency on what level of reporting or permitting is required. Possible interventions such as acquisition of large tracts of land for tree plantations in off-reserve areas may have the potential to generate site specific significant environmental/social impacts and must therefore be subjected to detailed EIA or SIA in order to make them environmentally sound, socially acceptable and economically feasible. The EPA requires that undertakings in excess of 40 ha be registered with the Agency and permit obtained prior to implementation.

### Use of spatial analysis and GIS Maps at the district/regional levels

The findings from the spatial analysis and forest cover trends (for 1990, 2000 and 2010) threw more light on the role of remote sensing and GIS in forest management. It could be observed that both vegetation cover (forests) have undergone some degree of degradation over the past twenty year period.

It is recommended that the FC/RMSC procure images of the same time overpass (date) in each of the years so as to get as much as possible the same energy reflectance captured by the sensors. It is also recommended that in-depth ground truthing be carried out to validate the findings because re-coding sections of the images without in-depth field validation could also affect the classification.

The Forestry Commission should take measures to develop a project which will establish the forest cover trends showing fringe communities for all the forest reserves and protected areas in the country and make such maps available to the district/regional FC officials to facilitate field monitoring.

### Legal/Policy Reforms

#### *Reforms and Amendments for REDD+*

In addition to the ongoing reforms and discussions on tree tenure, carbon rights allocation, the following should also be pursued for REDD+:

- Review of the 1999 Land Policy: Section 4.4 (d) of the land policy should be reviewed to include use of off-reserve areas also for community forestry/resource management areas.
- The FC should collaborate with the MC during designation of REDD+ areas in off-reserves. Currently, there are a number of mineral right holders carrying out various exploration/prospecting activities and their concession areas should be taken into consideration in the selection of off-reserve REDD+ areas.
- The FC should push for a policy or law, which will give some level of protection for REDD+ designated areas in off-reserves with regard to land subject to the allocation of Mineral rights (Section 3 of the Mineral and Mining Act 2006, Act 703 and surface right issues (Section 72 (1) of the Minerals and Mining Act 2006, Act 703). This should be done in consultation with the Minerals Commission.
- Amendment to the Alternative Dispute Resolution Act 2010, Act 798 to include in its scope of application some environmental/forestry matters (and specify which environmental matters to be included in the scope in agreement with key stakeholders such as EPA, FC, WRC, LC, MC, FC) or specifically include in the scope of application forestry matters as applied to REDD+.

### *Admitted Farms/ Settlements in Forest Reserves*

Admitted farms/settlements were allowed during the creation of forest reserves. These farms/settlements have gone beyond their demarcation/ recognized boundaries over the years and so extending their activities further into the reserves, causing further deforestation/forest degradation. These farms/ settlements have also become pretext for unrestricted access into such reserves by all kinds of people with diabolical intentions (e.g. to carry out illegal activities - encroachment, farming, chain saw activities).

In the immediate term, boundary demarcation for such farms, which have started in some forest reserves should continue and extended to all admitted farms/settlements to re-delineate the boundaries for admitted farms/settlements. The FC should clearly indicate in writing to the admitted farmers/settlers their roles/responsibilities and underlying reasons of their continual existence in the forest.

In the long term however, this policy of admitted farms/settlements is not in tandem with the principles of forest conservation or protection and should be reviewed if not abolished. During the field engagement, the WD of the FC in Takoradi indicated that the Division has successfully relocated all settlements/farms in its protected areas and we recommend the same to be carried out for affected production forest reserves.

### *Litigation and Penal System*

1. The FC should collaborate with the Judiciary/ Chief Justice on how to form special tribunals in selected regions (e.g. Western, Brong Ahafo and Northern Regions) to speedily dispose of litigation in forest offences/ forest reserves.
2. The FC in collaboration with the EPA and WRC should organise a training workshop
  - a. to discuss and share information on better ways of creating synergies among the Judiciary, Police, Forestry Commission and other stakeholders so that cases involving forestry offences/ forest reserves or general environmental matters are correctly prepared within shorter time-frames and successfully brought before the court and adequately and fairly prosecuted and adjudicated according to law with deterrent fines and penalties.
  - b. To discuss forestry and environmental laws and also the ecological justification for the conservation of forests/biodiversity to ensure protection of water bodies, climate change issues, livelihoods security for local communities highly dependent on the forest resources.
3. The FC should enhance the capacity of its prosecutors to be able to prosecute effectively and also seek injunctions on illegal farming activities in the reserves. Hitherto, when FC field officers attempt to destroy illegal farms in FRs, farmers go to court seeking injunctions to restrain FC field officers from destroying such illegal farms. Meanwhile the illegal farming activities continue and many times farmers do harvest even before court cases are finally determined. There is no restrain or injunction on the farming activity. Injunctions should restrain both parties' access to land in dispute.
4. The Forest Protection (Amendment) Act 2002, Act 624 has been in existence for the past twelve years. The Act should be reviewed to consider harsher and deterrent fines and penalties. It is recommended that the fines be reviewed every two or three years (e.g. in like manner as the Fees and Charges Instrument are regularly reviewed or amended for the public sector).

### *Declassification of some forest reserves*

It is recommended that further studies be conducted on all Forest Reserves to determine those forest reserves which are almost depleted and beyond recovery due to conversion into other land use. These FRs should be declassified as such. Identified patches of forests or sacred groves or secondary forests in

such affected reserves should be given to the community or stool to manage under dedicated forest or community forest management arrangement.

The Juabeso Forest district in the Western Region has 7 forest reserves, all of which are suffering degrees of encroachments. Four of the reserves are almost converted to cocoa farms and settlements while the remaining are under stress. The under listed reserves may be very difficult, if not impossible to restore and therefore recommended that these reserves be declassified:

- Sukusuku FR
- Manzan FR
- Bia-Tawya FR
- Bodi FR

#### Political Will and Financial Commitment

A non-partisan approach should be adopted to secure political will in curbing illegal activities in the on- and off reserves. The FC should liaise with a reputable international NGO (e.g. IUCN) to organize a bi-partisan conference on the state of the Ghanaian forests/environment and the climate change threats for the major political parties in the country, key TAs and other relevant NGOs. The purpose of the conference is to arrive at a consensus going forward. There is also the need to make available, adequate financial resources for forest management.

#### Cross Sectoral/Institutional Collaboration from national to district levels

The implementation of the REDD+ interventions cuts across sectors (e.g. forestry, agriculture, cocoa, energy, water resources, mining, fire among others) and would involve a number of institutions. This could generate conflicts and duplication of roles and responsibilities. Effective structures, arrangements and communication should be established to promote cross sectoral collaboration and dialogue among relevant sector agencies from the national level to the district level where actual implementation of projects will occur to ensure that all challenges/ bottlenecks with implementation and monitoring of any intervention are timely resolved.

The REDD+ should support and take advantage of the various opportunities or similar interventions ongoing under relevant public sector agencies (e.g. COCOBOD, MoFA, EPA, MMDAs) and involve or use such agencies to deliver or implement such REDD+ projects instead of creating parallel structures at the FC to implement such projects. Proper MOU/contract and budget should be put in place to guide the collaboration with relevant institutions.

#### **Monitoring and Evaluation Proposal**

The Proposal is aimed to ensure that the identified potential environmental impacts/ risks are efficiently monitored. The REDD+ Secretariat in the Climate Change Unit of the Forestry Commission has developed a REDD+ M&E Framework and it is recommended that the monitoring and evaluation system for environmental and social safeguards be linked or incorporated into the overall REDD+ Monitoring and Evaluation (M&E) system to avoid duplication of structures.

The key principles guiding the Monitoring and Evaluation Proposal are that:

- M&E for safeguards should be transparent and participatory
- It should be hosted on FC website
- Consultative process should be established and local communities/CSOs should be able to provide feedback into the system

- Issues of training and capacity needs for monitoring stakeholders should be identified and addressed to ensure an effective M&E system

## **Conclusion**

REDD+ in general appears to be a positive concept, but on its own cannot bring about the changes in forest governance, political will and social behavior required to ensure that proposed strategy options are implemented in an effective, efficient and equitable manner in order to minimize adverse environmental and social risks/impacts and guarantee the success of REDD+.

The success of REDD+ will much depended upon an effective stakeholder collaboration and dialogue, partnership with traditional authorities, broader legislative and policy reforms, increased public and community awareness creation and participation, attitudinal changes, strengthened institutional capacity and more importantly an equitable benefit sharing.

From the three regional workshops organised, it is clear that the three ecological zones have different priorities to issues and therefore zonal considerations should be factored into the designing of REDD+ approaches and interventions. It is also important to package the required messaging for acceptance and smooth take-off of FIP/REDD+ related activities taking into consideration previously failed or not very successful programmes/projects.

## 1.0 INTRODUCTION

### 1.1 Background

Reducing Emissions from Deforestation and Forest Degradation (REDD+) is a proposed global mechanism to mitigate climate change, while mobilizing financial resources for socio-economic development in forest countries. The Forest Carbon Partnership Facility (FCPF), facilitated by the World Bank, brings together 50 donor and forest country participants with the aim of supporting the forest countries in the preparation and subsequent implementation of their REDD+ Strategies.

Ghana is a key participant country in the FCPF and the Government is currently implementing its Readiness Preparation Proposal (R-PP) with regards to the REDD+ Readiness phase, and has requested a FCPF Readiness Preparation Grant to support the design of its REDD+ Strategy. This Strategy aims to control deforestation and degradation in order to reduce green house gas emissions into the atmosphere.

The Forestry Commission under the Ministry of Lands and Natural Resources is the Government implementing agency responsible for the forestry and wildlife sectors. The Climate Change Unit of the Forestry Commission is spearheading the REDD+ Mechanism in the country.

Strategic Environmental and Social Assessment (SESA) is a key component of Ghana's Readiness Preparation Proposal (R-PP) to the Forest Carbon Partnership Facility (FCPF). The SESA is therefore part of the phased approach of the FCPF Readiness Mechanism. The SESA is also consistent with the Strategic Environmental Assessment (SEA) approach applied by the Ghana Environmental Protection Agency.

The Environmental Protection Agency (EPA) Act 1994 (Act 490) gives mandate to the Agency to ensure compliance of all investments and undertakings with laid down Environmental Assessment (EA) procedures in the planning and execution of development projects, including compliance in respect of existing ones. Concerning Policies, Plans or Programmes (PPPs), a Strategic Environmental Assessment (SEA) which is a systematic comprehensive process of evaluating the environmental effects of PPPs and its alternatives is recommended for improved decision making.

### 1.2 Definition of SEA

SEA is a process directed at providing a holistic understanding of the environmental and social implications of the proposed PPP, and among the many definitions of SEA are those of Sadler and Verheem (1996) and Therivel et al (1992) which are provided hereunder:

#### Sadler and Verheem (1996)

"SEA is a systematic process for evaluating the environmental consequences of proposed policy, plan or programme initiatives in order to ensure they are fully included and appropriately addressed at the earliest appropriate stage of decision making on par with economic and social considerations."

Therivel et al. (1992) define it as:

"SEA is the formalized, systematic and comprehensive process of evaluating the environmental effects of a policy, plan or programme and its alternatives, including the preparation of a written report on the findings of that evaluation, and using the findings in publicly accountable decision-making."

SEA is generally considered as a key tool for ensuring sustainable development by considering economic, socio-cultural and environmental issues at the PPP level of decision making. The institutional frameworks within which these issues are managed are also considered as an essential part of SEA process.

### **1.3 Objectives and Purpose of the SESA Study**

The overall objective of the SESA is to ensure that strategic environmental and social assessment principles are applied to integrate environmental and social considerations into Ghana's REDD+ readiness process in a manner consistent with Ghana's environmental laws and regulations and the World Bank's environmental and social safeguard policies.

In accordance with FCPF guidelines, special consideration will be given to livelihoods, rights, cultural heritage, gender, vulnerable groups, governance, capacity building and biodiversity.

The specific objectives of the strategic environmental and social assessment are to:

- Integrate environmental management and socio-economic concerns/decisions into Ghana's REDD+ readiness process;
- Provide avenues for the involvement of the public, local communities, proponents, private interest groups and government agencies in the assessment and review of the proposed strategy options among others;
- evaluate reasonable alternatives or options including the "no development scenario" for their likely significant effects, taking into account the REDD+ objectives and geographical scope;
- Analyse the risks and opportunities associated with the proposed REDD+ strategy options; and
- Provide guidelines/recommendations as an input into the design and implementation of the REDD+ Strategies.

Globally, the use of SEA or SESA to assess the environmental implication of a Policy, Plan or Programme (PPP) has become the norm. The SEA process is intended to improve decision making by providing stakeholders and the public with:

- The opportunities and risks associated with a policy, plan and programme; and
- The means to enhance the opportunities and to minimize or avoid the risks.

The SESA has been carried out to ensure that the implementation of the REDD+ mechanism contributes positively to sustainable forest management in line with the objectives of Ghana's 2012 Forest and Wildlife Policy. In addition, the SESA would contribute towards Ghana's overarching goal of environmental sustainability, climate change, economic growth, job creation and poverty alleviation programmes. With this in mind, the purpose of the SESA is to ensure operational integration of environmental quality objectives, economic efficiency principles, and social and gender equity goals into the REDD+ strategy options.



## 2.0 REDD+ MECHANISM AND INDICATIVE STRATEGY OPTIONS

### 2.1 Brief History- The Road to REDD+

*(This section was adapted from NCRC Report, August 2012 on Technical Training and Roundtable Discussion on REDD+ and Implementation Modalities for Traditional Chiefs, Demonstration Project Proponents and Senior Personnel of Forestry Commission)*

Since the early 1990's the United Nations Framework Convention on Climate Change (UNFCCC) has debated how forest protection and restoration should be included in global efforts to reduce atmospheric GHG concentrations. The following timeline chronicles key milestones in climate change policy development and the evolution of Reduced Emissions from Deforestation and Forest Degradation-Plus (REDD+).

*Early 1990's:* The first bio-carbon pilot projects were developed using carbon sequestration to achieve forest conservation. The first was Mbaracayú Forest Reserve Project in Paraguay, followed by pre-Kyoto 'pilot phase' projects -Noel Kempff Climate Action Project in Bolivia and the Rio Bravo Climate Action Project in Belize . These projects all developed their own strategies as no international protocols, regulations or methodologies were in place at the time and have successfully conserved critical forest habitat using climate-related funding.

*December 1997:* Under the Kyoto Protocol, an international agreement linked to the UNFCCC, the Clean Development Mechanism (CDM) was agreed as a financial mechanism to facilitate GHG emissions reductions. Although the principles of forest protection were discussed the CDM only adopted afforestation and reforestation on land cleared since 1989. This was due to concerns over the robustness of monitoring and reporting techniques and the fear that forest protection would make emissions reduction targets too easy. Densely forested countries countered that the CDM rewards countries with historically poor forest governance.

*February 2005:* The Kyoto Protocol was ratified and the agreement entered into force for a period of five years, with the commitment period ending in 2012. Developed countries (described as Annex I countries) were assigned legally binding targets for emissions reductions and started to address these partly through the exchange of offsets known as Certified Emission Reductions (CERs). To date, forestry projects constitute only 1% of total projects accepted under the CDM.

*December 2007:* Reduced Emissions from Deforestation and forest Degradation (REDD), without the plus at this stage, was approved in principle at the UNFCCC's 13<sup>th</sup> Conference of the Parties (COP) in Bali. This was formalised in the Bali Action Plan under decision 1/CP.13 Para 1 (b) (iii): *"Policy approaches and positive incentives on issues relating to reducing emissions from deforestation and forest degradation in developing countries; and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries"*.

*December 2008:* At a meeting in Poznan the concept of REDD+ was adopted following pressure from countries who wished 'conservation, sustainable management for forests and enhancement of forest carbon stocks' to be given the same level of priority in the negotiations as deforestation and forest degradation.

*December 2009:* One of the positives to come out of COP 15 was recognition of the importance of REDD+. The Copenhagen Accord recognised the need for immediate establishment of a REDD+ mechanism, however the details of how this would be achieved were not finalised. The rights of Indigenous Peoples and local communities were also more formally acknowledged along with biodiversity conservation principles, and safeguards were outlined to preserve both.

*December 2010:* REDD+ is fully accepted in the Cancun Accord but no mechanisms are agreed to finance its implementation. REDD+ now includes afforestation and reforestation and post 2012 these are likely to be carried out under this mechanism rather than the CDM, but details of how this incorporation will take place are still to be finalised. During this initial REDD-Readiness phase both international and national methodologies and frameworks are being refined using pilot projects as demonstrations, helping to improve technical and infrastructural capacity by providing on-the-ground test cases which can be referenced and replicated.

December 2011: REDD+ was further buttressed at the Durban, South Africa COP 17 in 2011 when the technical text on REDD+ was completed with SBSTA agreement. The Durban Platform further strengthened the progress towards REDD+ implementation and the role of future markets.

*Future:* REDD+ looks set to further evolve to allow emissions reductions through Agriculture, Forestry and Other Land Uses (AFOLU) which includes agroforestry, peat lands and soils. These discussions received increased exposure at COP 17 and are expected to grow in the debate at future COPs.

#### ***What makes REDD+ different?***

REDD+ achieves GHG emissions reductions through one or a mixture of the following forestry strategies:

- reduced deforestation and forest degradation;
- forest conservation;
- sustainable management of forests; and
- enhancement of forest carbon stocks (afforestation and reforestation).

#### ***Difference between Deforestation and forest degradation***

The distinction between **deforestation** and forest **degradation** is important as they are handled differently under the REDD+ mechanism. *Deforestation* is the direct human-induced conversion of forested land to non-forested land less than 10% crown cover, while *forest degradation* refers to negative changes in forest structure and function that limit its production capacity.

#### ***The difference between CDM and REDD+***

CDM allows reduced emissions from afforestation and reforestation actions only, whilst REDD+ allows reduced emissions from deforestation and forest degradation including conservation, sustainable forestry management and enhancement of carbon stocks.

CDM delivers Certified Emissions Reductions (CERs) which can be traded on the compliance market. REDD+ delivers Voluntary Emissions Reductions (VERs) which can currently be traded on the voluntary market. CERs generally command higher prices than VERs.

On the ground reforestation and afforestation actions are much the same for REDD+ and CDM, but accounting, reporting and verification methods differ under the two regulations.

For newly developing afforestation and reforestation initiatives REDD+ is the best mechanism to use, however CDM may be better for projects already at the implementation stage as CDM credits currently demand a higher sale price.

## **2.2 Background to Ghana joining REDD+**

Ghana joined the international REDD readiness process through the World Bank's Forest Carbon Partnership Facility (FCPF). Ghana initially completed the Project Idea Note (RPIN) in 2008, and then in 2010 received approval of the R-PP (Readiness Preparation Proposal). The R-PP is a living document that presents a strategy and implementation framework for REDD+ in Ghana, which is intended to incorporate and operate synergistically with other existing and anticipated programs and mechanisms.

Specifically, the REDD+ strategy focuses on reducing emissions from deforestation and degradation, as well as conservation, enhancement of carbon stocks, and sustainable forest management (the plus in REDD+). Though the process has been slow, Ghana received a US\$ 3.6 million grant in support of its R-PP and REDD+ activities from the FCPF. Ghana has recently transitioned from the first phase (analysis, preparation, consultation) to the second phase (piloting and consultation) of Readiness Implementation.

In 2012, Ghana was also admitted into the UN-REDD program, though no financial support has been allocated to Ghana to date. Available FCPF funding for REDD+ in Ghana, while important, is not adequate to cover all estimated costs, nor is it allowed to support national piloting activities. FCPF money is targeted towards capacity building and supporting key steps in the process. Additional sources have been sought, and both Japanese and German support has been allocated to assist with development of national reference levels and development of a national MRV system.

Ghana's REDD+ forest definition defines forest as having 15% canopy cover, trees of 5 meters height, and covering a minimum area of 1 ha. The Cocoa Forest REDD+ Program is focused on two main forest types, "closed forest" and "open forest". Closed forest covers just over 1.5 million ha in the program area and constitutes intact forest. Open forest represents degraded forests, secondary forests, and shaded cocoa farms, and covers approximately 3.1 million ha.

## **2.3 The problem of deforestation and forest degradation in Ghana**

In Ghana, the problem is essentially one of gradual degradation rather than deforestation, and is incremental rather than dramatic, with no single dominant driver. The underlying causes are those typical of forest degradation in the more heavily populated countries of the tropics, and involve a complex of demographic, economic and policy influences. The immediate drivers include: policy/ market failures in the timber sector; burgeoning population in both rural and urban areas, which increase local demand for agricultural and wood products; high demand for wood and forest products on the international market; heavy dependence on charcoal and fuelwood for rural and urban energy; limited technology development in farming systems, and the continued reliance on cyclical 'slash and burn' methods to maintain soil fertility.

The prominence of one forest crop in the national economy (cocoa), and recent varietal changes (industrial and artisanal/small scale) is a concern in some areas, as is the use of fire in livestock

management. These drivers, which are fully discussed in the REDD+ Readiness Preparation Proposal are to be revisited during the preparation of the REDD+ strategy, and are summarised below:

#### Policy drivers

- Imbalances of forest exploitation in favour of large scale timber industry
- Under priced goods and services
- Weak regulatory mechanisms and resource rights
- Weak law enforcement

#### Demographic drivers

- Population growth and urban expansion
- Slash and burn agricultural practices
- Economic drivers
- High international demand for primary products
- Low prices for lumber on the domestic market

#### Natural forces

- Wild fires
- Floods
- Pests and diseases

## **2.4 Proposed REDD+ Strategy Options for Ghana**

Addressing deforestation and forest degradation presents a number of challenges in Ghana, though success in REDD+ policy making would offer significant benefits for the society not only in the area of carbon emissions reductions but also in relation to biodiversity conservation, forest industry, agriculture and livelihoods. Ghana's R-PP identifies 13 priority strategy options to tackle the main drivers of deforestation and degradation in the country as provided below:

- A. Improve the quality of multi-stakeholder dialogue and decision –making
- B. Clarify natural resource rights
- C. Improve forest law enforcement, governance and trade (FLEGT)
- D. Address unsustainable timber harvesting by supporting sustainable supply of timber to meet export and domestic / regional timber demand
- E. Address problem of local market supply
- F. Mitigate effects of agricultural expansion (particularly cocoa in the HFZ)
- G. Strengthen local decentralised management of natural resources
- H. Improve sustainability of fuel wood use
- I. Improve quality of fire-affected forests and rangelands
- J. Address local market demand
- K. Improve returns to small-scale enterprise
- L. Improve regulation of mining activities to reduce forest degradation Rehabilitation of degraded forest reserves
- M. Implement actions to address acts of God (wind and natural fire events, floods, pests and diseases)

The 13 strategy options were made available to the SESA Consultant to assess the opportunity and risks of these strategy options as part of the SESA assignment.

**Table 2.1** shows list of REDD+ related projects and programs in the forestry sector. **Figure 2.1** shows all the REDD+ pilot sites in Ghana and **Figure 2.2** shows the REDD+ pilot sites within the High Forest Zone (HFZ).

**Table 2.1: List of REDD+ related projects and programs**

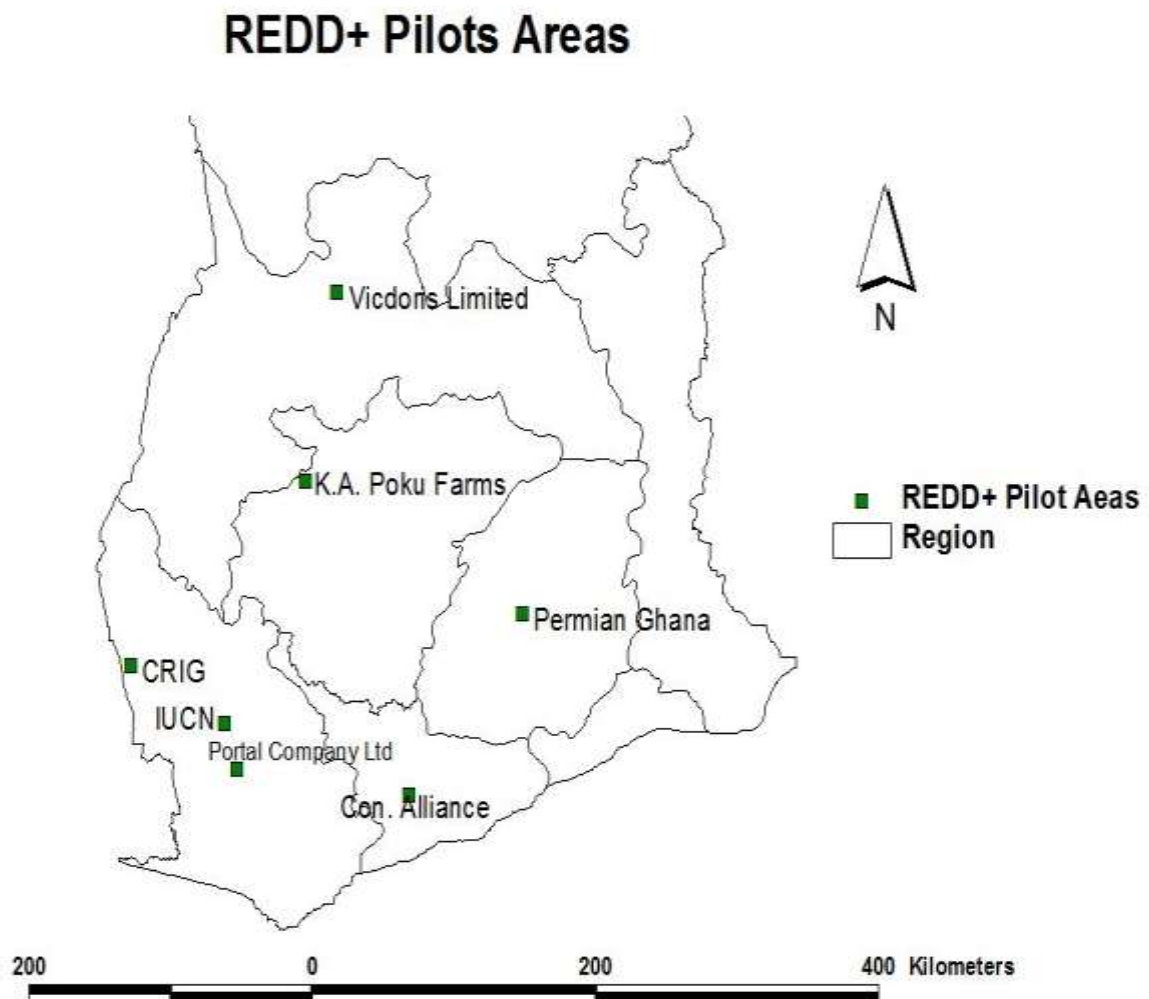
<b>Title of Projects / Programme</b>	<b>Objective</b>	<b>Date of Commencement</b>	<b>Expected date of completion</b>	<b>Amount (Million US\$)</b>	<b>Donor</b>	<b>Location</b>	<b>Comment</b>
Natural Resources & Environmental Governance Programme (NREG)	To address governance issues as regards to natural resources and environment to ensure sustainable economic growth, poverty alleviation, increasing revenues and improving environmental protection	2008	2012	Annual Pledges paid by Donors	EU, WB, DFID, The Netherlands, AFD	MLNR, FCHQ	<i>Provided support for the development of Tree tenure and benefit sharing framework, which is relevant to REDD+</i>
Non Legally Binding Instrument on all Types of Forests (NLBI)	To pilot a project to support Ghana to move in the implementation of the NLBI	2009	2011	0.5	GIZ, FAO, BMZ	FCHQ	<i>To strengthen political commitment and action at all levels to implement effectively sustainable management of all type of forest. Relevant to REDD+</i>
Forest Preservation Project (FPP)	To support measures towards forest conservation in Ghana by providing equipment, materials and services	2011	2012	7.8	JICA	FCHQ	<i>Project developed land cover/land use maps for FC</i>
REDD+ - Reducing Emission from Deforestation and Forest	To assist Ghana to prepare itself for REDD+ and become ready for the	2010	2013	3.6	World Bank-FCPF	FCHQ	

Degradation (FCPF) Project	implementation of the REDD+ mechanism						
Land Administrative Project (LAP)	Dealing with land tenure and legislative reforms in aspects of land use	2011	2014	70	World Bank	MLNR	<i>Is assisting in documentation of land parcels which is very important for cocoa farmers and landlords</i>
Global Environment Facility (GEF)	Small grants administered through UNDP on Environment for improving local resource use	2011	2014	Pledges	UNDP	Various Communities	<i>Funds can support biodiversity, climate change, land degradation and deforestation programmes and these are of relevant to REDD+ initiatives/mechanisms</i>
Other REDD+ Related Projects	Aims to establish CDM mechanism and Piloting REDD+ and Biodiversity Conservation with communities	2009	2013	1,2	ITTO/UNEP	MEST	
Community Forestry Management Project	Poverty Reduction and restoration of degraded forest reserves through plantations	2004	2010	10	AfDB	MEST	
National REDD+ Pilot Projects under R-PP	Facilitate implementation of REDD+ in Ghana using a sub-national, bottom up approach so as to facilitate	2011	TBD	No funding to support pilot project development, but capacity		FC-CCU	

	learning and widespread stakeholder engagement			building available.			
National REDD+ Pilots							The REDD+ pilot sites did not take off as expected due to lack of funding
Proponent		Project Title		Location			
K.A. Opoku Farms		REDD+ Piloting Project		Kwamisa Forest Reserve, Offinso, Ashanti			
Cocoa Research Institute of Ghana		Managing Cocoa Production Landscapes for Increases in Forest Carbon Stocks and Biodiversity Conservation		Aowin-Suaman, Western			
Permian Ghana		Ecosystem Restoration; A Proposal for a REDD+ Project in Ghana		Atewa, Atewa Extension, Dadieso Forest Reserves			
Conservation Alliance		Cocoa Agroforestry Project		Kakum National Park area, Central Region			
International Union for the Conservation of Nature (IUCN)		IUCN Pro-poor Agroforestry Project		Asankragwa, Western			
Portal Company Limited		Portal Agroforestry Model		Akasaho Amuni, Western			
Vidcoris Limited		Bee-keeping and Woodlot Development to Alleviate the Degradation of the Agro Ecosystem of the Dawadawa and Surrounding Areas in Brong Ahafo		Kintampo, Brong Ahafo			

Source: Adapted from the Ghana Investment Plan for the FIP, October 2012, except for the comments column which is produced by the consultant.





**Figure 2.1:**      **REDD+ Pilot Sites**

### Map Of REDD+ Pilot Areas In The Cocoa-Forest Mosaic Landscape (HFZ)

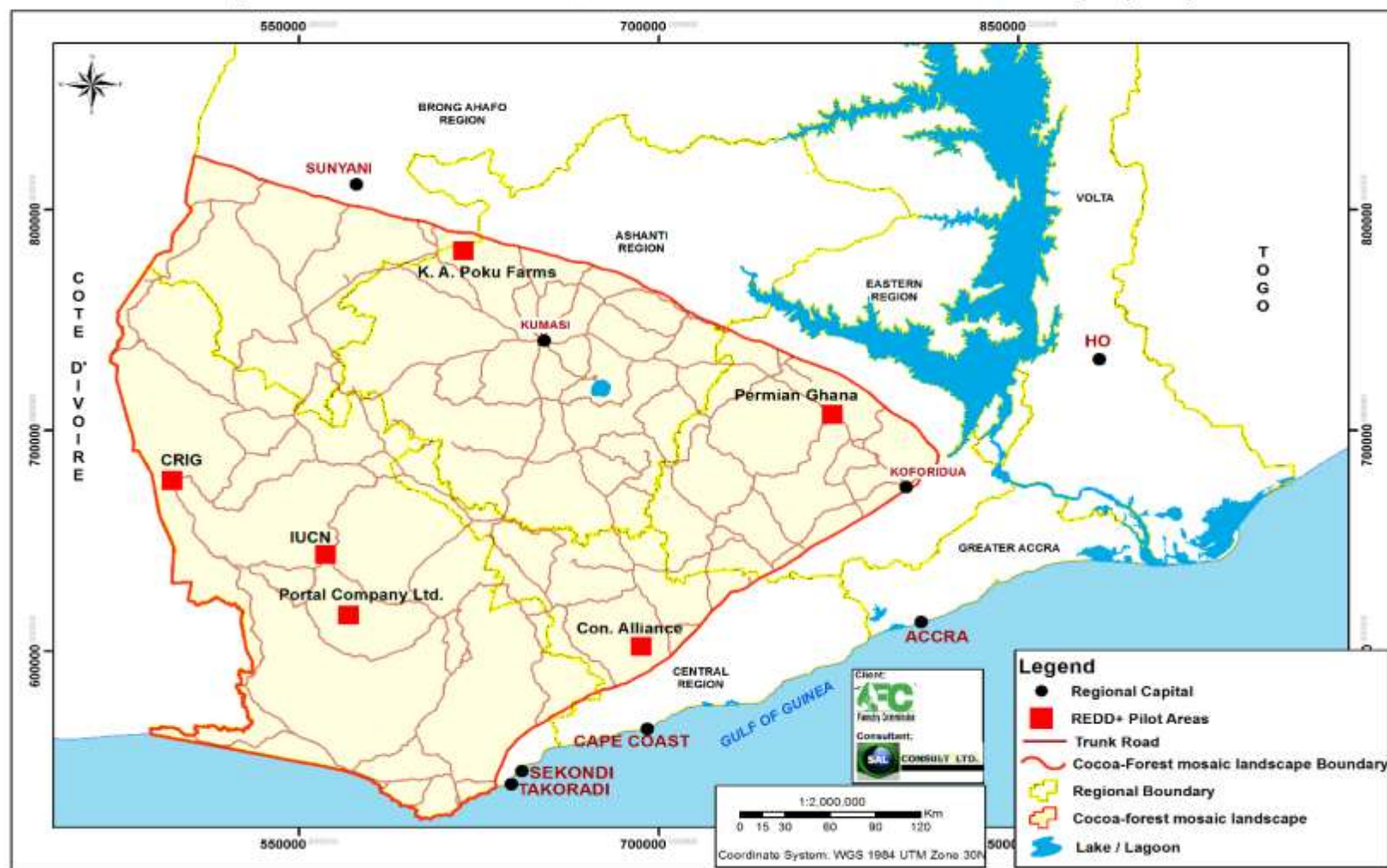
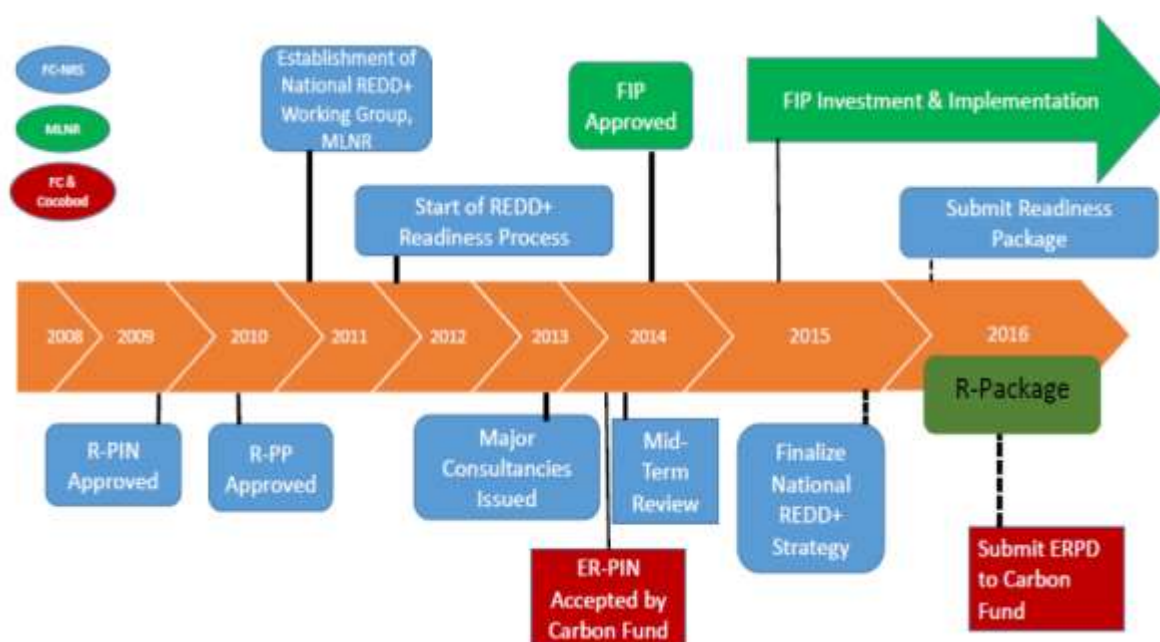


Figure 2.2: REDD+ Pilot Sites within the High Forest Zone

## 2.5 Overview of Ghana's REDD+ Readiness Process and Timeframes under FCPF

### Readiness Preparation Phase (2008-2016)

Ghana hopes to complete its REDD+ readiness preparation phase and submit its Readiness-Package (RPackage) by mid-2016 for international approval. During 2016, the Cocoa Forest REDD+ Program will also undergo a preparation and design phase to refine the baseline and reference level, plan implementation and financing and complete other critical work. The programme plans to submit its Emission Reductions Programme Document (ER-PD) in mid-2016 with the goal of signing an Emission Reductions Programme Agreement (ERPA) in early 2017. Ghana's REDD+ Readiness Process is captured in the figure below.



**Figure 2.3: Ghana's REDD+ Preparation Phase**

### Initiation Phase: Early Implementation, Monitoring & Performance Based Payments (2017-2021)

The initiation phase of REDD+ will focus on implementing the Cocoa Forest REDD+ Program, the Programme for Policy and Legislative Reform and begin planning the Shea Landscape Programme for the Northern Woodland Savannah. Monitoring will begin, and assuming that the programme is able to demonstrate an impact, performance based payments will result.

### Acceleration & Upscaling (2022-2030)

During this period, REDD+ will be in full implementation mode, and scaled up to cover the whole country, with periodic monitoring and reporting taking place and performance based payments being received.

### Consolidation Phase& Planning Forward (2031-2037)

This phase marks the end of the Cocoa Forest REDD+ Program, as currently articulated. Final payments for the program will be received, assuming performance is demonstrated. A decision will need to be taken on the future of REDD+, in light of how other programmes are progressing and the national and international context.

### 3.0 THE SESA METHODOLOGY AND APPROACH

#### 3.1 Introduction

The SESA was carried out within the context of national and/ or institutional sustainability policies/plans/strategies, and World Bank Safeguard policies. It also identified the relationship with other national Policies, Plans, and Programmes and mechanisms that ensure integrated decision- making.

#### 3.2 The SESA Process/Content

##### SESA as a Process

*SEA or SESA is a process: something that occurs over time, not a "snapshot" assessment of a strategic action.*

SESA is a participatory process, involving other actors and agencies working in the complex field of sustainability and sustainable development. The goal or output of the participatory process is to build mutual understanding and communication bridges amongst stakeholders and increased environmental awareness.

##### Content

SESA is a rational and objective study to assess environmental and social implications of proposed interventions. Where possible the SESA proposes better alternatives and institutional arrangements for effective environmental management. The content is the outcome of the SESA process.

The process of the SESA study for the REDD+ Mechanism consists of five steps based on review of Strategic Environmental Assessment (SEA) practice in Ghana including:

- I. Preparation
- II. Scoping & Situation Assessment/Baseline Study
- III. Assessment of Strategy Options
- IV. Monitoring and Evaluation Proposal
- V. Reporting, Communication and Learning.

The SESA process is summarized in **Figure 3.1**. During the implementation of Step 2: Scoping & Situation Assessment/Baseline Study and Step 3: Assessment of Indicative Strategy Options, there were series of stakeholder consultations/meetings and literature reviews in order to identify key environmental and social priorities and validate various environmental and social issues and concerns, and also enable the stakeholders to participate in the assessment process at three regional workshops.

#### 3.3 Step 1: Preparation

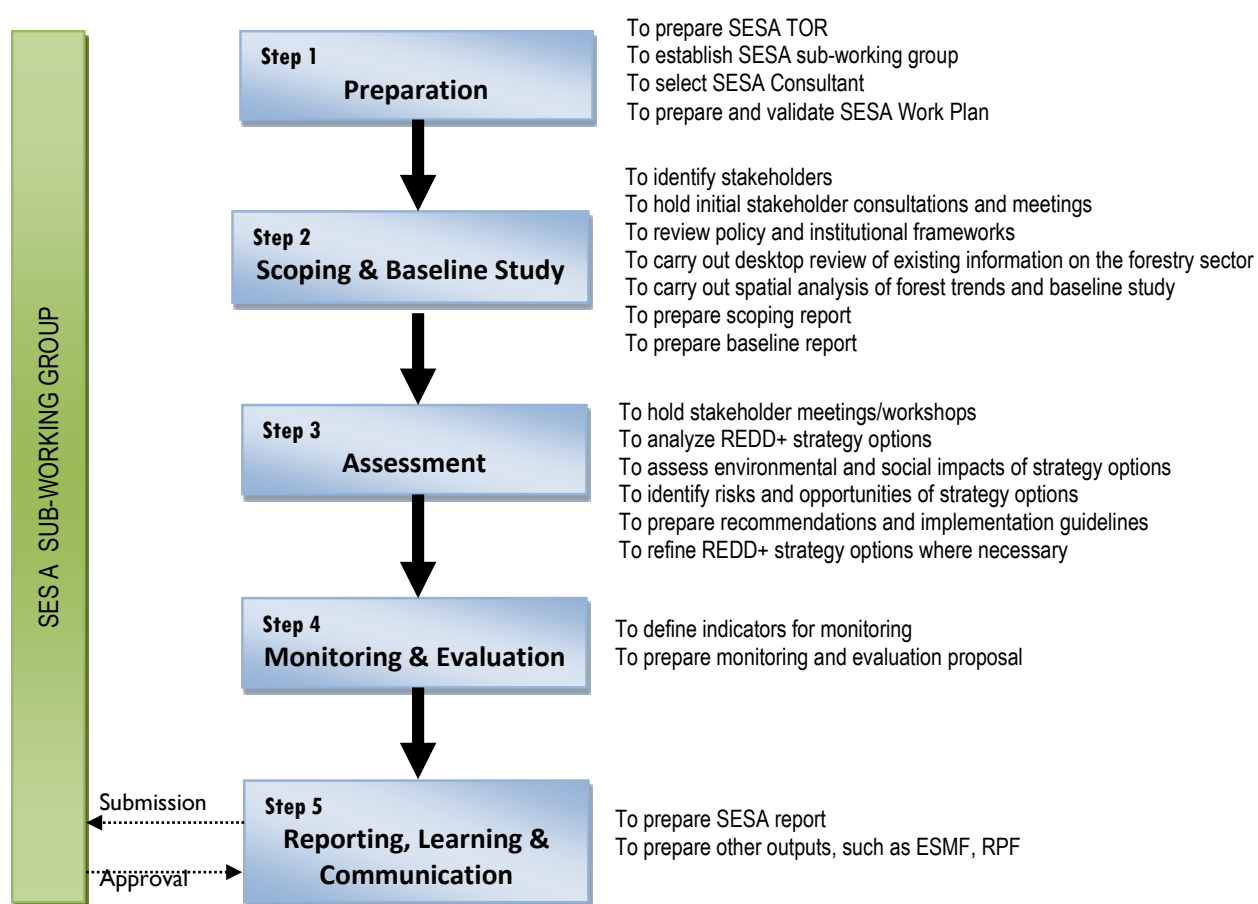
##### 3.3.1 Background

This step is the starting point of the SESA study. A SESA Sub-working group was formed at the Forestry Commission to oversee the SESA process and study. The 6 member SESA sub-working group comprised of officials from both government and non-governmental organization including:

- 3no. Forestry Commission officials-Climate Change Unit;
- 1no. Environmental Protection Agency (EPA) official;

- 1no. Minerals Commission official; and
- 1no. Tropenbos International official.

The SESA sub-working group is chaired by the official from the EPA. The Terms of Reference (ToR) for the SESA study was prepared. The ToR contains the background, purpose/objectives of the SESA project as provided in **Annex 1**. The process of selecting a consulting firm to undertake the SESA was done through tendering and SAL Consult Limited was selected.



**Figure 3.1:** Process of the SESA Study

### **3.3.2 Project kick-off and Inception Stage Reporting**

SAL Consult Limited signed the contract with the Forestry Commission on 21<sup>st</sup> October, 2013 to begin the assignment. There was no formal kick off meeting involving the client but the consultant ensured that the SESA team members comprising the key Consultant, Mr. Seth Larmie and five (5) other consultants, were available and willing to carry out the assignment within the prescribed period of eighteen (18) months.

A comprehensive list of stakeholders prepared during the R-PP process was made available to the SESA team to review. The SESA team carried out stakeholder gap analysis and updated the list of stakeholders and prepared an Inception Report with a draft SESA Work Plan which spelt out work activities for the SESA study and submitted same to the Forestry Commission on 14<sup>th</sup> November, 2013.

### **3.3.3 Revision and Acceptance of SESA Work Plan**

The initial SESA work plan as spelt out in the SESA Inception report was for Forestry Commission to organise a national workshop to validate the SESA Work Plan. This approach was revised after the presentation and preliminary discussions of the Inception report with the client on November 27, 2013.

It was recognized that numerous consultation meetings have been held during the R-PP process to engender sufficient awareness among the various stakeholders, and quite importantly, there is need to avoid workshop 'fatigue' among these stakeholders.

A more cogent concern was identified to be the need to engage the client and the other REDD+ RPP consulting teams, especially Pwc (responsible for Development of REDD+ strategy options), in detailed discussions towards ensuring consistency and harmonization of activities, so that the various consultancy group activities would logically feed into each other to achieve the desired REDD+ project objectives.

The Work Plan was therefore accepted through an intense engagement with selected relevant partner institutions (those constituting the SESA sub-working group), departments of the Commission and also through the very useful contributions solicited from the other consulting teams.

The SESA Consultants participated in three (3) formal meetings with the client and other consulting teams to arrive at a revised SESA work plan which satisfied the objectives of the project and also ensure its timeliness. These meetings were held as follows:

- SESA sub- working group meeting on 27 November 2013;
- Meeting with other REDD+ consultants to ensure synergies in REDD+ consultancies on 09 December 2013; and
- FC Project Implementation Committee meeting with REDD+ FCPF consultants on 18 December 2013.

#### SESA sub- working group meeting

The FC invited SAL Consult Ltd to present its Inception report to the SESA sub- working group for review and comments. This first meeting was held on 27 November 2013 and was attended by representatives of some partner institutions as well as relevant departments within the FC. The consultant's work plan as well as the identified stakeholders was thoroughly discussed and agreed.



The consultant was subsequently requested to consider revising the SESA project duration from 18 months to 12 months, to end by December 2014. The updated list of stakeholders included in the Inception report was discussed and confirmed, and categorised under (1) Government Ministries, (2) Implementing Agencies, (3) Private sector, and (4) Civil societies. This list is presented below.

*Government institutions and Implementing Agencies*

- Office of the President/ Office of the Vice President/ENRAC
- REDD Technical Group/TCC+/National Climate Change Committee
- Ministry of Lands and Natural Resources
- Ministry of Foreign Affairs
- Ministry of Finance and Economic Planning
- Ministry of Food and Agriculture
- Ministry of Environment, Science & Technology
- Ministry of Local Government and Rural Development
- Ministry of Education
- Ministry of Energy
- Ministry of Chieftaincy
- Ministry of Justice
- Ministry of Gender and Social Protection
- Forestry Commission
- Minerals Commission
- Lands Commission
- Water Resources Commission
- Energy Commission
- National Development Planning Commission
- Environmental Protection Agency
- Ghana Revenue Authority
- Commission on Human Rights and Administrative Justice
- Savannah Accelerated Development Authority
- Ghana National Fire Service
- Customs Excise and Preventive Service
- Immigration Service
- National House of Chiefs
- Judiciary
- Office of the Administrator of Stool Lands
- Ghana Investment Promotion Centre
- Cocoa Board
- Meteorological Services Agency
- National Disaster Management Organisation
- National Commission on Civic Education
- Department of Community Development

*Private Sector*

- Association of Ghana Industries
- Wood industry sector (GTMO, DOLTA, GTA, GATEX, FOWAG, Small scale carpenters)
- Mining industry- Chamber of Mines, Small scale miners

- Fuel wood and charcoal burners associations (producers, transporters, consumers)
- NTFP gatherers (hunters, fishers, fuel wood collectors)
- Farmers (large and small scale; food and cash/tree crop)
- Services- investors/ buyers, technical experts, consultants

#### *Civil Society*

- CBOs (e.g. fire volunteers, economic groups, women groups)
- Community Resource Management Committees, CREMAs, CFCs
- National and International NGOs –working in the agricultural and forestry sectors
- Traditional authorities- chiefs etc
- Professional associations- Ghana Institute of Foresters
- Trade Unions Associations, FOSSA, Students Unions
- Research and academic organisations – FORIG, KNUST, UENR
- Religious bodies
- Association of People Living with Disabilities
- Forest Forums (District, Regional, National)

#### *Development Partners*

- Bilateral and multilateral donors –e.g. World Bank etc

#### Meeting with other REDD+ consultants

This meeting was called at the instance of Pwc and was held on the 9 December 2013 with the following objectives:

- Present and share out ToRs and identify synergies and dependencies
- Discuss how to create synergies in our various methodologies, and
- Explore how to chronologically link our various deliverables.

A major outcome of this meeting which was attended by three (3) consulting teams namely, Pwc, Indufor Oy and SAL Consult Limited, was an appreciation of the scope of work of the various consulting teams and their work plans, as well as an agreement to share information and work together to achieve synergy especially in the engagement of stakeholders through the organization of meetings and national workshops.

#### FC Project Implementation Committee meeting

The FC invited all the REDD+ RPP consulting teams to a meeting with the Project Implementation Committee on 18 December 2013 to present and discuss their inception reports and work plans towards achieving synergies in their activities and outputs.

At the end of the meeting, consensus was achieved especially in the scheduling, timing and implementation of various national meetings and workshops. There was also agreement on platforms to be used for further interaction and collaboration among the consulting teams, both formal and informal. An urgent consideration was therefore ensuring consistency in approach and output with the other consulting group activities and properly aligning our respective timelines.



#### Submission of revised SESA Work Plan

Based upon the understanding reached from the various meetings held in November and December 2013, SAL Consult submitted a revised SESA Work Plan on January 13, 2014 which was accepted by the FC.

#### Updated SESA Work Plan

The World Bank Technical Mission team was in the country in February 2014 on a follow-up mission on Ghana's ER Program and suggested a meeting on 18<sup>th</sup> February, 2014 at the Forestry Commission and also the completion of the SESA/ESMF by mid October 2014 in order to meet the Bank's calendar requirements. In effect, the SESA timeline was reduced from 12 months to 10 months.

The FC invited all the REDD+ R-PP consulting teams to a meeting with the Project Implementation Committee on 25<sup>th</sup> February, 2014 to re-discuss their work plans towards meeting the new timelines and also achieving synergies in their activities and outputs.

*The Mission team and key FC officials present at the meeting also proposed that the SESA team should consider the Ankasa-Krokosua-Bia Corridor as a case study.*

Following from the meeting and discussion with the Commission and Bank's mission team on 25<sup>th</sup> February, 2014, an updated SESA work plan was submitted to the Commission on 11<sup>th</sup> March 2014. The final updated Work Plan is provided in **Annex 2**.

#### **3.3.4 Mobilisation for Field Work**

The consultant was mobilised on February 10, 2014. As part of the contract arrangement, the FC is to provide transport for the SESA field work.

#### **3.3.5 Participation in the preparation of the ER-PIN**

The SESA consultants were invited and participated in two separate multi-stakeholder workshops in February 2014 at Aburi and Accra towards the preparation of the ER-PIN. The ER-PIN workshops were very helpful. Issues of drivers of deforestation/forestation, agents, underlying causes and barriers; need for institutional collaboration and coordination especially between FC and COCOBOD, increasing farm yields and income of farmers among other things were discussed.

### **3.4 Step 2: Scoping and Situation Assessment/Baseline Study**

#### **3.4.1 Introduction**

The scoping contains the clarification of background information and base conditions, initial stakeholder consultations, identification of key environmental and social issues for REDD+ mechanism. The baseline study also involved (i) spatial analysis on forest cover trends to identify hot spot of deforestation and degradation along the Ankasa-Krokosua-Bia Corridor, and (ii) case study of the Ankasa-Krokosa corridor. The significant objective of the initial stakeholder consultations carried out is to determine stakeholder opinions, ideas and interest.

### 3.4.2 Activities

The main objective of scoping and situation assessment was to identify the key environmental and social issues for the REDD+ mechanism. This was done through the following main activities as indicated in the ToR:

- Desktop study/literature review of existing information on the forestry sector as well as existing national policies, plans and programmes;
- Determination of selected stakeholder opinions and concerns; and
- Spatial analysis of base maps and forest trends in the Western and Brong Ahafo Regions; and
- Case Study of the Ankasa Krokosua corridor.

The desktop/literature review was to build a preliminary picture of principal concerns about the forest sector and validate comments from individual stakeholders. Relevant publications were identified through personal knowledge of SESA team members, primary stakeholders including the Forestry Commission and international NGOs, and a keyword search of the Internet. Initial consultations were held with some stakeholders in the three major ecological zones of the country- high forest zone, transition zone and savanna zone to determine their opinion and concerns.

### 3.4.3 Key Literature Consulted

#### Technical/Research Documents

A number of literatures on Ghana forestry/timber resource management activities and REDD+ related reports were consulted to find out what issues of environmental and social concerns related to forestry governance, afforestation/plantation development challenges, REDD+ concerns were being expounded. The major ones reviewed included:

- Ghana Green economy, Scoping Study-Draft, UNEP.
- Ghana FIP Final, October 2012.
- Ghana Forest Report –draft, towards Ecowas Convergence Plan, prepared by Prof. K. Tufour, March 2012.
- Road Map, Mainstreaming Gender considerations into REDD+ processes in Ghana -Final Draft, IUCN/WEDO/PDA, November 2011.
- Report on REDD+ and CDM Sensitization Workshop for Forestry Commission frontline Staff in the Greater Accra, Volta, Eastern, Brong Ahafo and the three Northern Regions – FC report.
- Revised Ghana R-PP, Final December 2010.
- Technical Training and Roundtable Discussion on REDD+ and Implementation Modalities for Traditional Chiefs, Demonstration Project Proponents and Senior Personnel of Forestry Commission, NCRC, August 2012, John Mason and Rebecca Asare, with input from Martin Yelibora and Winston Asante.
- Voluntary Partnership Agreement between the EUROPEAN COMMUNITY and the REPUBLIC OF GHANA on Forest Law Enforcement, Governance and Trade in Timber Products into the Community
- *Analysis of linkages and opportunities for synergies between FLEGT, REDD and national forest programme in Ghana*. Wageningen, the Netherlands: Tropenbos International Ghana. (Marfo, E., E. Danso and S.K. Nketiah. 2013).
- Strengthening off-reserve timber resource management in Ghana, Tropenbos international –Ghana Workshop Proceedings 7, TBI-Ghana 2009.
- Report of the Committee of Enquiry into the Grievances of Farmers being ejected from certain Forest Reserves in the Western Region, November 1974.

- Implications of the Legal and Policy Framework for Tree and Forest Carbon in Ghana: REDD Opportunities Scoping Exercise. By the katoomba group, Forest Trends and Nature Conservation Research Centre, June 2010.

#### National Policy and Legal Documents

Relevant national policies/plans and laws were identified and reviewed as part of the SESA and these covered:

- The 1992 Constitution of Ghana
- Ghana Shared Growth and Development Agenda
- Land policies and regulations/bills
- Forest policies and regulations
- Mining and mineral policies and regulations
- Environmental protection and assessment policies and regulations
- Energy policies/plans and regulations
- Water policies and regulations
- Agricultural policies and programmes
- Employment policy and labour laws
- Local government and chieftaincy laws
- Gender and children's policy and laws
- Fire and occupational safety laws

#### Outcome of the Literature Consultation

The literature review and desktop study provided good information for the country environmental and socio-economic baseline condition and the situation assessment with regard to the national legal framework.

#### **3.4.4 Initial Stakeholder Consultations**

The SESA consultants carried out initial consultations with selected stakeholders in the Western, Central, Ashanti, Brong Ahafo, Northern and Upper East Regions. The 6 regions were selected to cover the major ecological zones (High forest, Transition and Savannah).

#### *Methodology*

The SESA consultants visited the stakeholders in the various regions/districts and communities and had personal interviews with the institutions and community group discussions at the community level. At the community level, three separate meetings were held: (i) meeting for men/boys (ii) meeting for women/girls (iii) meeting for all (i.e. both men/women). This approach was adopted in order for the consultant to clearly appreciate gender issues related to REDD at the community level. The communities were selected based upon interaction with the Regional/District FSD Managers with regard to issues and drivers of deforestation/forest degradation in the area.

The list of stakeholder institutions and communities that the team was able to contact is provided below and details of stakeholders contacted are provided in **Annex 3**. A detailed report on the initial stakeholder engagement is provided in **Annex 4**, as a standalone/separate document.

#### **WESTERN REGION**

- Takoradi FSD, Takoradi WD, Takoradi TIDD

- Jomoro district
  - Wildlife Ankasa Camp-Elubo, Amokwa CREMA, Nsuano community
- Aowin/Enchi District –
  - District FSD, OASL, DPO-Aowin District Assembly, MoFA –District Directorate, District Cocoa Officer –CSSVD/Extension
- Sefwi Wiawso Municipal
  - MPO-SWMA, OASL, CHRAJ, COCOBD, FSD, Akurafo community, Kunuma community

#### CENTRAL REGION

- Assin Fosu District, FSD, MoFA, OASIS Foundation, Artisanal Sawn Mill Association
- Cape Coast District FSD, Regional FSD

#### ASHANTI REGION

- Kumasi
  - FSD, RMSC, TIDD, FORIG, Tropenbos International, OASL, Lands Commission, Institute of Renewable Natural Resources, KNUST

#### BRONG AHAFO REGION

- Goaso District District FSD, Boadikrom settlement, Akwaboa No II Settlement
- Kintampo District FSD, Nante community, Krabonso Dagomba line community
- Sunyani
  - Form Ghana, University of Energy & Natural Resources, FSD, OASL, Department of Community Development

#### NORTHERN REGION

- Zakaryili community, Moya community, Grupe community, Nasoyili
- Tamale
  - FSD, Lands Commission, Tree Aid Ghana –NGO, Care International- NGO, Acdep- NGO, OASL
  - EPA, MoFA, RCC, GNFS, Department of Community Development

#### UPPER EAST REGION

- Bolga FSD, Bolga WD, Navrongo FSD, Lands Commission, OASL, GNFS, NADMO, EPA, FORIG, MoFA, WRC, RCC

#### Others

- Energy Commission, Accra; SNV, Accra

### **3.4.5 Spatial Analysis for Forest Cover Trends**

#### Final draft SESA Report - 2014

As part of the SESA, spatial analysis is to be applied in mapping and for overlaying different sets of information to identify critical areas of concentration of environmental and social issues. The spatial analysis work is to include:

- Construction of a base map using information on forest cover, river basins, water bodies and salient biodiversity characteristics;
- Mapping of main economic activities in forest areas and surrounding;
- Mapping of existing infrastructure and identification of proposed road, rail and power projects under investigation or implementation; and

- Superimposition of these three layers of information to define critical areas under or potential environmental stress in forest areas.

Two regions were selected for spatial analysis and these are the Western and Brong Ahafo Regions. The two regions were selected to enable the proposed Forest Investment Programme (FIP) which is intended to focus on these two regions also benefit from the spatial analysis work. The forest cover trends was carried out to map among others the trend of degradation over a period of twenty years using Landsat TM and ETM+ Satellite images taken in 1990, 2000 and 2010 of the Brong Ahafo and Western Regions of Ghana. Landsat images of 1990, 2000 and 2010 of both regions were classified for the various land use and land cover classes. Un-Supervised classification was used to classify the satellite images into six classes using ERDAS Imagine software: -

- Closed canopy / Very active bushes - dark green
- Open canopy / Active bushes – green
- Shrubs/herbaceous cover – tan
- Herb/grass cover - orange
- Built-up/bare surfaces – brown
- Water body – blue

The detailed report on the spatial analysis and forest cover trends captured in the 2014 SESA Report Annexes has been excluded from this updated SESA report.

#### Updated SESA Report - 2016

Following from the World Bank comments on the SESA Report prepared in 2014 (**Ref. Annex 9**), the SESA Consultant procured new landsat data covering the high forest zone to replace the 2014 spatial analysis and mapping work and outputs. The various land use and land cover maps developed for the HFZ as a result were used for the analysis and baseline reporting in the updated SESA report. The detailed maps on the forest cover trends from 1990 to 2015 for the HFZ is provided in **Annex 5**. The following maps were produced for the HFZ:

- 1). Road and Rail Network with Forest Reserves
- 2). Drainage Map with Forest Reserves
- 3). 1990, 2000, 2010, and 2015 Land use classified satellite image maps for the HFZ
- 4.) 2015 classified satellite image map for the HFZ with settlements and road network
- 5). 1990, 2000, 2010, and 2015 Land use classified satellite image maps for the Forest Reserves
6. 2015 classified satellite image map for the forest reserves with settlements and road network

The classified satellite image maps prepared with some economic activities have the following legend:

- Water body
- Closed canopy forest or closed forest
- Open canopy forest or open forest
- Farmland
- Forb/grass
- Settlement/Bare Area
- Coconut
- Open Mine
- Oil Palm

- Rubber
- Wetland

### **3.4.6 Case Study**

#### Methodology

Field visits were undertaken to ascertain the conditions of selected forest and wildlife reserves within the Ankasa Krokosua corridor in the Western Region. Interviews were conducted with managers of the forest reserves and protected areas as well as forest edge dwellers to identify the driving forces of forest degradation and deforestation where it is apparent. Discussions were held with the executive officers of the Amokwawuso CREMA (Community Resource Management Area), one of 19 certified CREMAS out of a total of 27 country-wide. The case study report is provided in **Annex 6**.

The conditions of the reserves were classified as follows:

- Almost Extinct – the reserve almost has been converted to other land use and appears unrecoverable e.g. human settlement, farms
- Partially Extinct – over 50% of land area converted to other land use e.g. human settlements and farms and appears recovery will be difficult
- Poor – fragmented, canopy broken in many places due to encroachment by farmers
- Good – largely intact but faces significant threats from competing land use in the near future
- Excellent- completely intact; no threat in the near future

### **3.4.7 Preparation and Submission of Scoping Report**

The Scoping Report was prepared from the initial stakeholder consultations, desktop/literature reviews and the spatial analysis carried out. The report was submitted to the FC on 16<sup>th</sup> July, 2014 for review and comments. The report summarized the various issues under Political & Economic, Legal & Policy, Environmental, Socio-economic & cultural, Institutional & Administrative, and Gender.

## **3.5 Step 3: Assessment**

Three regional workshops were organised between 20<sup>th</sup> July and 2<sup>nd</sup> August, 2014 with participants drawn from all the ten regions of the country. The country was divided into three major belts for the regional workshops as follows:

- Northern Belt, which comprises of the Northern Region, Upper East Region and Upper West Region, and was held in Tamale from 21<sup>st</sup> to 22<sup>nd</sup> July, 2014;
- Middle Belt, which comprises of the Brong Ahafo, Ashanti, Eastern, and Volta Regions, and was held in Kumasi from 24<sup>th</sup> to 25<sup>th</sup> July, 2014; and
- Southern Belt, which comprises of the Western, Central and Gt. Accra Regions, and was held in Takoradi from 31<sup>st</sup> July to 1<sup>st</sup> August, 2014.

The objectives of the SESA regional workshops were:

- to bring together stakeholders to validate the outcome of the scoping study (i.e. present to them the outcome of the SESA scoping study and solicit their comments, inputs, and concerns on the outcome of the Scoping study);
- to enable stakeholders prioritize the key issues of environmental and social concern;

- for the EPA to make presentations on the various Ghana SEA tools to enable participants apply the key SEA tools for the assessment of the proposed REDD+ strategy options and prioritized environmental and social issues;
- to provide the platform for other REDD+ consultants with activities related to SESA to make presentations to the stakeholders on their various assignments and to solicit stakeholder concerns and inputs; and
- to further create awareness on the progress with the implementation of the REDD+ Mechanism in the country among stakeholders.

#### SEA Tools applied for the assessment

The assessment of the proposed strategy options was carried out using three of the Ghana SEA tools developed by the EPA and these include:

- Internal Consistency/Compatibility matrix;
- Compound matrix; and
- Opportunity/Benefit and Risk matrix.

The Internal Consistency/Compatibility and Compound matrices were applied at the three regional workshops. The details of the activities carried out at the three regional workshops are provided in the Regional Workshop Report in **Annex 7** (as a standalone or separate report). The SESA consultants using information from stakeholders obtained during the field consultations as well as their professional expertise, knowledge and experiences carried out the Opportunity and Risk Matrix.

The aim of the internal consistency/compatibility matrix is to determine the degree to which the proposed REDD+ strategy options support or work against each other, i.e., how compatible they are. The aim of the compound matrix is to evaluate individual strategy options against the prioritized environmental/social issues, to see if implementation of any strategy option is likely to address or have a negative implication or adverse impact on the key environmental/social concerns. The environmental and social issues or criteria relate to the four pillars of sustainability:

- Natural resources
- Socio-cultural
- Economic, and
- Institutional.

The aim of the opportunity/benefit and risk assessment is to identify the opportunities/benefits available and potential risks associated with the implementation of the various strategy options. The opportunities present ongoing/existing or immediate past or planned policies, plans or programmes within relevant institutions which the FC can take advantage of to improve or enhance project implementation for the overall good of the environment and communities. The risks are environmental/social and institutional challenges and uncertainties existing and or likely to occur during the implementation of the various strategy options.

#### Recommendations and Refinement of Strategy Options

As part of the assessment, appropriate mitigation measures/guidelines were proposed where incompatibility of strategy options was identified; where implementation of strategy options is likely to have negative implication on key environmental/social concerns and to address potential risks and challenges identified. General recommendations were also provided to guide the successful

implementation of the REDD+. Suggestions from stakeholder workshops, collaboration efforts between SESA consultants and Pwc as well as review activities of the SESA consultants formed the basis for the proposed refinement of the strategy options.

### **3.6 Step 4: Indicators, Monitoring and Evaluation Proposal**

Monitoring and Evaluation Proposal was prepared and included in the SESA report. The Proposal is aimed to ensure that the identified potential environmental impacts/ risks caused by the adoption of the strategy options are efficiently monitored. An ESMF and RPF were prepared as separate documents to determine the likely environmental and social outcomes or impacts from the proposed strategy options and to provide relevant indicators for monitoring as well as roles, responsibilities and capacity building/ training requirements.

The REDD+ Secretariat/Climate Change Unit of the Forestry Commission has developed a REDD+ M&E Framework and it is recommended that the monitoring and evaluation system for environmental and social safeguards be linked or incorporated into the overall REDD+ Monitoring and Evaluation (M&E) system to avoid duplication of structures.

The key principles guiding the Monitoring and Evaluation Proposal are that:

- M&E for safeguards should be transparent and participatory
- It should be hosted on FC website
- Consultative process should be established and local communities/CSOs should be able to provide feedback into the system
- Issues of training and capacity needs for monitoring stakeholders should be identified and addressed to ensure effect M&E system

### **3.7 Step 5: Reporting, Learning and Communication**

#### Presentation on Scoping Report & Progress of Work to SESA Sub-working group

The SESA consultants made a presentation of the Scoping Report/Progress of Work to the SESA sub-working group at the FC on 13<sup>th</sup> August, 2014 for comments and suggestions.

#### Preparation of SESA Summary Report for SESA National Validation Workshop

The SESA consultants prepared a SESA summary report on Scoping and Assessment activities following a meeting with the FC Climate Change Unit, FC Project Oversight/Implementation Committee and the World Bank Mission team on September 9, 2014 at the Ghana office of the World Bank. The meeting was preceded by presentations from the various REDD+ consultants. The purpose of the meeting was to agree and confirm timelines and to ensure that all REDD+ consultants were on track with regard to meeting the Banks deadlines.

The SESA consultant submitted an electronic copy of the SESA Summary Report to the FC on 15<sup>th</sup> September, 2014. The FC invited stakeholders (invitation letter provided in **Annex 8**) to the national validation workshop for the SESA on 18<sup>th</sup> September, 2014. The list of participants at the Workshop is also provided in **Annex 8**. The SESA consultant made a presentation on the Scoping and Assessment activities carried out so far, after which participants made various contributions, comments, and suggestions and also sought some clarifications.



#### Preparation of draft SESA Report

The comments from the national validation workshop were incorporated into the draft SESA Report. The draft report was submitted to the FC at the end of September 2014.

#### Review of draft SESA Report

It was captured at the August 13, 2014 presentation to the SESA sub-working group that, the FC should engage some key experts to review the draft SESA report and provide comments for finalization since the workshop will not provide the needed time for technical scrutiny of report.

#### Final draft SESA Report

Upon receipt of comments from the FC, the SESA consultant finalized the draft SESA Report. The final draft SESA report was submitted to the FC in October 2014.

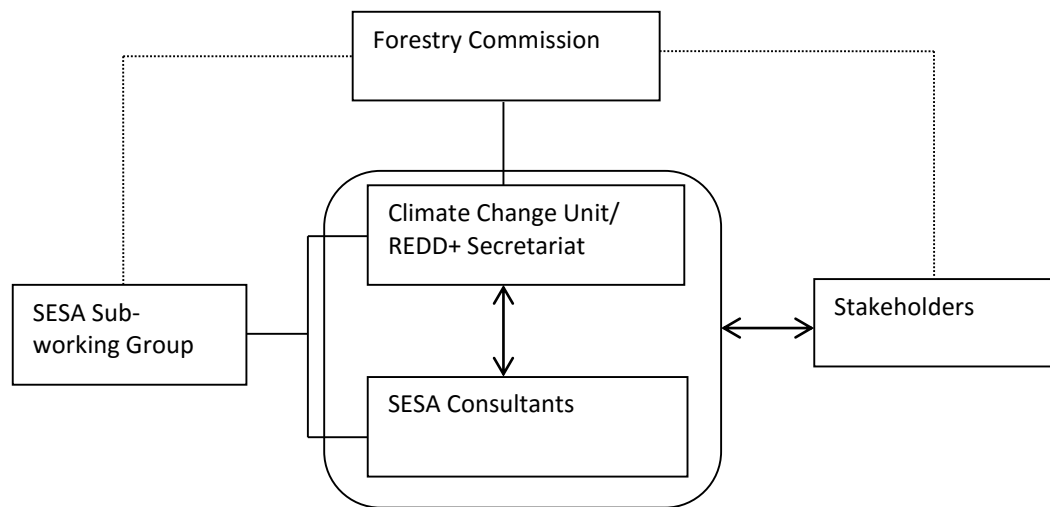
#### Update of SESA Report

The SESA Consultant received the World Bank comments (**Ref. Annex 9**) on the SESA Reports (including ESMF and RPF) via the FC in May 2016 as part of a new assignment (Analysis of Environmental and Social Impacts of the Emissions Reduction Program and the Development of a REDD+ Social and Environmental Safeguard Information System (SIS). The updated SESA Report was submitted to the FC in August 2016.

### **3.8 The SESA Study Organization**

The organization for the SESA study is composed of a five-member SESA Consultants (from SAL Consult Ltd, a Ghanaian Environmental Consulting firm based in Accra) with support from the Climate Change Unit/REDD+ secretariat of the Forestry Commission and assistance from the EPA and inputs from Stakeholders as shown in **Figure 3.2**. The SESA Consultants were made up of:

- Mr. Seth Larmie, Team Leader, an Environmental Assessment Expert;
- Mr. Emmanuel Acquah, an Environmentalist;
- Mr. Andorful Adu-Nyarko, a Socio-economic Expert/Stakeholder Engagement Expert;
- Dr. James Adomako, a Biodiversity/Forestry Expert;
- Mr. Ernest Kusi-Minkah, an GIS/Remote Sensing Expert; and
- Mrs. Faustina Boakye, a Gender Expert.



**Figure 3.2: SEA Study Organization**

## 4.0 LEGAL, POLICY AND INSTITUTIONAL FRAMEWORKS

### 4.1 Objectives

The objectives are to (i) identify national policies/plans as well as laws/regulations/bills and institutions of relevance to the forestry sector/activities and or REDD+ principles/objectives, (ii) review policies/plans/programmes or laws to identify overlaps, conflicts, or consistency with each other and influence on REDD+ principles/objectives, (iii) identify key institutions of relevance to REDD+, (iv) determine which World Bank Safeguard policies are likely to be triggered under REDD+ programme, (v) provide a brief on the environmental assessment process in Ghana.

### 4.2 National Policies and Legal framework

The following national policies, laws and regulations provided in **Table 4.1** have been identified and reviewed as part of the SESA for the REDD+ Mechanism.

**Table 4.1: Summary of key Policies and Legal Framework**

<b>The 1992 Constitution of Ghana</b>
<b>Ghana Shared Growth and Development Agenda</b>
<b>Land Policies</b>
National Land Policy, 1999
Administration of Lands Act of 1962 (Act 123)
Lands Commission (LC) Act 2008, Act 767
Office of the Administrator of Stool Lands Act 1994, Act 481
<i>Land Use and Spatial Planning Bill, draft October 2011</i>
<b>Forest Policies and Regulations</b>
1994 Forest and Wildlife Policy
2012 Forest and Wildlife Policy
Forestry Commission Act of 1999 (Act 571)
Forest Ordinance of 1927 (Cap 157)
Trees and Timber Decree of 1974 (NRCD 273)
Trees and Timber (Amendment) Law of 1983 (PNDCL 70)
Trees and Timber Amendment Act of 1994 (Act 493)
Forest Protection Decree of 1974 (NRCD 243)
Forest Protection (Amendment) Act of 1986 (PNDCL 142)
Forest Protection Amendment Act of 2002 (Act 624)
Concessions Act of 1962 (Act 124)
Timber Resources Management Act of 1997 (Act 547)
Economic Plant Protection Act of 1979
Interim Measures for Controlling Illegal Harvesting Outside Forest Reserves of 1995
Forest Plantation Development Fund Act of 2000 (Act 583)
<b>Mining and Mineral Policies</b>
National Mining Policy

Minerals Commission Act 1993, Act 450
Mining and Minerals Act of 2006 (Act 703)
<b>Environmental Protection &amp; Assessment Policies and Regulations</b>
Environmental Protection Agency Act, 1994 Act 490
National Environment Policy, 2013
Environmental Assessment Regulations 1999, LI 1652
National Climate Change Policy, 2013
<b>Energy Policies</b>
Strategic National Energy Plan
National Energy Policy, 2010
Energy Commission Act 1997, Act 541
Renewable Energy Act, 2011, Act 832
<b>Water Policy</b>
Water Resources Commission Act, 1996 Act 522
National Water Policy, 2007
Buffer Zone Policy, 2014
<b>Agricultural Policy</b>
Food and Agriculture Sector Development Policy (FASDEP)
Ghana Irrigation Policy, June 2010
Tree Crops Policy, 2012
<b>Investment, Employment, Labour, Gender, Local government, Chieftaincy, Safety and others</b>
National Employment Policy
National Gender and Children Policy
Ghana Investment Promotion Centre Act 1994, Act 478
Local Government Act 1993, Act 462
Local Government Service Act, 2003, Act 656
Chieftaincy Act 759 of 2008
National Pensions Act, 2008, Act 766
The Labour Act 2003, Act 651
Workmen's Compensation Law 1987
Intestate Succession Law, PNDC Law 111 (1985)
The Children's Act 1998, act 560
Factories Offices and Shop Act, 1970, Act 328
Ghana National Fire Service Act 1997,
Control of Bush Fires Law of 1983 (PNDCL 46)
Control and Prevention of Bush Fires Act 1990
Ghana Meteorological Agency Act, 2004, Act 682
Alternative Dispute Resolution Act 2010, Act 798

#### **4.2.1 The 1992 Constitution of Ghana**

##### ***Safeguarding the national environment for posterity***

Article 36 (9) states that *The State shall take appropriate measures needed to protect and safeguard the national environment for posterity; and shall seek co-operation with other states and bodies for purposes of protecting the wider international environment for mankind.*

##### ***Lands and Natural Resources***

- Article 258 establishes a Lands Commission and prescribes the functions of the Commission.
- De-vesting of the Northern, Upper East and Upper West Regions lands: Article 257 Section (3) de-vest all lands in the Northern, Upper East and Upper West Regions of Ghana which immediately before the coming into force of this Constitution were vested in the Government of Ghana. These land are not public lands but have been reversed to the original owners.
- Rights and Interest in land for non-citizen of Ghana: Article 266 Imposes restrictions on the rights and interest in land that could be granted to a non-citizen of Ghana.
- Stool/Skin Lands: Article 267(1) - All stool lands in Ghana shall vest in the appropriate stool on behalf of, and in trust for the subjects of the stool in accordance with customary law and usage.
- OASL: Article 267(2): Establishes the Office of Administrator of Stool Lands and prescribes its functions.
- Stool land revenue disbursement: Article 267(6) Provides for the disbursement formula for stool land revenue.
- Protecting natural resources: Articles 268 and 269 make provision for the protection of natural resources of the country. It gives power to Parliament under Article 269 ((1) to provide for the establishment of a Minerals Commission, a Forestry Commission, Fisheries Commission and such other Commissions as Parliament may determine, which shall be responsible for the regulation and management of the utilization of the natural resources concerned and the co-ordination of the policies in relation to them.

##### ***Chieftaincy***

Article 270(1) recognizes the institution of chieftaincy, together with its traditional councils as established by customary law and usage.

##### ***Property rights of spouses***

According to Article 22 of the 1992 Constitution:

- (1) A spouse shall not be deprived of a reasonable provision out of the estate of a spouse, whether or not the spouse died having made a will.
- (2) Parliament shall, as soon as practicable after the coming into force of this Constitution, enact legislation regulating the property rights of spouses.
- (3) With a view to achieving the full realisation of the rights referred to in clause (2) of this article -
  - (a) Spouses shall have equal access to property jointly acquired during marriage;
  - (b) Assets which are jointly acquired during marriage shall be distributed equitably between the spouses upon dissolution of the marriage.

Parliament is yet to enact law to regulate the property rights of spouses as provided in article 22 (2). In order to avoid gender discrimination against women, benefit sharing arrangements under REDD+ should

be properly spelt out for joint ownership of REDD+ projects, especially between husbands/wives or between partners.

Generally, the Constitution of Ghana is consistent with REDD+ principles and objectives.

#### **4.2.2 Ghana Shared Growth and Development Agenda (GSGDA)**

It provides for the Vision for the Environment and Natural Resource Sector in Section 4.2.2. The key objectives of the sector for the future are as follows:

- Improved cross-sectoral environmental management, including the consideration of global issues such as climate change and loss of biodiversity, as well as the opportunities of initiatives such as REDD+, VPA/FLEGT;
- Strategic Environmental Assessment (SEA) applied to inform decision-making and mainstream environment into all sectors of the economy, especially as regards the cost of environmental degradation;
- Improved Environmental and Social Impact Assessment (ESIA) processes and compliance;
- Decentralized environmental management, including the enforcement of laws on waste, illegal mining and chain-saw logging at the local level;
- Improved environmental monitoring and reporting; and
- Strengthened functional partnership and participation in environmental management with civil society, development partners, industry, and research bodies.

The GSGDA is consistent with REDD+ principles and objectives and goes further to acknowledge the use of SEA to inform decision-making and mainstreaming environment into all sectors of the economy.

#### **4.2.3 Land Policies and Regulations**

##### **National Land Policy, 1999**

The policy is conservation sensitive with potential for ecosystem maintenance, biodiversity and scenic preservation under protection and leaving management of such lands under the collaborative effort of major stakeholders including the government and the community. Key aspects of Section 4.4 (Ensuring Sustainable Land Use) of the Policy relevant to REDD+ are provided below:

*(a) The use of any land in Ghana for sustainable development, the protection of water bodies and the environment and any other socioeconomic activity will be determined through national land use planning guidelines based on sustainable principles in the long term national interest.*

*(b) All lands declared as forest reserves, strict nature reserves, national parks, wildlife sanctuaries and similar land categories constitute Ghana's permanent forest and wildlife estates, and are "fully protected" for ecosystem maintenance, biodiversity conservation and sustainable timber production.*

*(c) Fully protected land areas as well as timber and wildlife protected areas may be used for the purposes of education, research, recreation and tourism, provided that such uses are compatible with the conservation of the environment.*

*(d) Land categories outside Ghana's permanent forest and wildlife estates are available for such uses as agriculture, timber, mining and other extractive industries, and human settlement within the context of a national land use plan.*

*(i) Unless approved by the appropriate public authority, no land use change of any kind will be countenanced.*

*(m) All land and water resources development activities must conform to the environmental laws in the country and where Environmental Impact Assessment report is required this must be provided. Environmental protection within the 'polluter pays' principle will be enforced.*

In terms of policy actions in Section 5.0, one key section to be implemented by government within the policy framework is Section 5.2, *Facilitating Equitable Access to Land*, which has the following subsections:

*(a) Review the phenomena of landlessness and migrant farmers and take steps to eliminate, or at least, minimise conditions contributory to migration and encroachment.*

*(b) Collaborate with the traditional authorities and other land stakeholders to review, harmonise and streamline customary practices, usages and legislations to govern land holding, land acquisition, land use and land disposal.*

*(c) Encourage, through appropriate incentives, stools/skins, clans and land owning families to create land banks for present and future generations.*

**The State Lands Act, 1962** The Act 125 vests the authority to acquire land for the public interest in the President of the Republic. It also gives responsibility for registering a claim on the affected person or group of persons, and provides details of the procedure to do this. The State Lands Act, 1962 provides some details to be taken into consideration when calculating compensation such as definitions for (1) cost of disturbance, (2) market value, (3) replacement value, etc.

**Administration of Lands Act of 1962 (Act 123)** gives the President power to acquire stool land that will be held in trust (in the public interest) and vests the management of all stool land revenue in the central government.

**Land Title Registration Law of 1986 (PNDCL) 153** provides for the registration of title to lands.

#### **Lands Commission Act, 2008 (Act 767)**

The Lands Commission Act 2008 establishes the Lands Commission to integrate the operations of public service land institutions in order to secure effective and efficient land administration to provide for related matters. The objectives of the Commission include among others to:

- Promote the judicious use of land by the society and ensure that land use is in accordance with sustainable management principles and the maintenance of a sound eco-system; and
- Ensure that land development is effected in conformity with the nation's development goals.

#### **Office of the Administrator of Stool Lands Act 1994, Act 481**

The OASL Act 1994, Act 481 establishes the Office of the Administrator of Stool Lands as enshrined in Article 267 (2) of the 1992 Constitution and it is responsible for establishment of stool land account for each stool, collection of rents and the disbursement of such revenues. The Administrator is charged with

the management of stool lands and in accordance with the provisions in the 1992 Constitution, 10% of the gross revenue goes to the Administrator of Stool Lands for administrative expenses whilst the remainder is disbursed as follows:

- 25% to the stool through the traditional authority for the maintenance of the stool;
- 20% to the traditional authority;
- 55% to the District Assembly, within the area of authority of which the stool lands are situated.

*The 1999 land policy does not appear to give support to off-reserve afforestation or reforestation programmes as provided under Section 4.4 (d) of ensuring sustainable land use. REDD+ should push for a review of the 1999 Land Policy to encompass off-reserve afforestation/reforestation programmes, e.g. community forestry/dedicated forest etc*

*LVD Crop Compensation Rate: Current crop compensation rates do not cover timber tree species or naturally occurring trees or trees grown to provide ecosystem/environmental services. There are no compensation rates for loss of tree carbon.*

#### **Land Use and Spatial Planning Bill, draft October 2011**

The purpose of this intended ACT is to harmonize and regulate the laws on land use and planning, provide for sustainable development of land and human settlements through a decentralized planning system, ensure judicious use of land in order to improve quality of life, promote health, safety and regulate national, regional, district and local spatial planning, and generally deal with spatial aspects of socio economic development as well as provide for related matters.

The objectives of the intended Act include among other things

- to establish a Land Use and Spatial Planning Authority to implement the provisions of this Act.
- to ensure a continual review, effective planning and management of human settlements and spatial planning policies.
- to ensure attainment of a balanced distribution of urban population and a spatially integrated hierarchy of human settlements to support the national socio-economic development of the country.
- to facilitate improvement in the natural and built environment, and ultimately the quality of life for the population in rural and urban settlements.
- to ensure formulation and continued revision of spatial development framework, structure and local plans to guide the development of human settlements in Ghana.
- to encourage the private sector to partner the public sector in financing the development and management of human settlements and related physical development.
- to enhance the attainment of Ghana's decentralization agenda and in particular create an enabling regime for district assemblies to better perform the spatial planning and human settlements management functions.
- to create the regime for all district assemblies to acquire land in order to prevent or reverse depressed settlements.
- to establish spatial planning and land use database
- to ensure the creation of appropriate zoning schemes and also prevent encroachments or breach of zoning schemes.
- to facilitate the creation of an institutional framework that can ensure the effective operation of the law at the, district and local level.
- to ensure the establishment of an inter-sectoral approach to decision making in spatial planning in tandem with government development objective to attain a coordinated approach to development.



The scope and application of the intended Act shall apply to:

- (1) All institutions responsible, directly and indirectly, for human settlement, spatial planning and use of land.
- (2) Any person, whether corporate or otherwise, charged with responsibility for development of any land within the territory of Ghana.
- (3) Development of any area within the territory of Ghana
- (4) All national spatial planning matters
- (5) All regional, district, urban, town and local planning matters
- (6) Spatial development framework, structure plans, local plans, joint development schemes
- (7) Land use permit process and standards
- (8) Sub-divisions of land for purposes of development.
- (9) The creation and delineation of districts, special towns and special development, special planning areas or any matter relating to the spatial planning or development control function
- (10) The carrying out of development by private or public institutions including any physical development undertaken by entities hitherto exempted from planning permit compliance procedures as set out in Schedule 1 Part II of the National Building Regulations, LI 1630 of 1996.
- (11) All spatial planning and physical development issues related to preparation of plans including:
  - (a) National Development Plan
  - (b) Regional Development Plan including the co-ordination of the spatial aspects of District Development Plans where applicable.
  - (c) District Development Plan
  - (d) Joint Development Plans
  - (e) Special Development Plans
  - (f) The division of Ghana or part of Ghana into administrative districts
- (12) All matters related to land use including enforcement appeals, complaints and administrative process within the territory of Ghana.

*The Land use and spatial planning bill provides a comprehensive coverage of land use planning at national, regional and district levels which is very relevant to REDD+, especially with regard to agricultural and forestry land use. The lack of holistic national, regional and district land use plans in the country is a drawback to sustainable development. REDD+ should push for the passage of the Bill into law.*

#### **4.2.4 Forest Policies and Regulations**

The 1994 Forest and Wildlife Policy (FWP), revised in 2011, and the 1996 Forestry Development Master Plan (FDMP) serve as guiding policies for the sector.

##### **Forest and Wildlife Policy, 1994**

The Forest and Wildlife Policy of 1994 aims at conservation and sustainable development of the nation's forest and wildlife resources for maintenance of environmental quality and perpetual flow of optimum benefits to all segments of society. Specifically, the policy will, among others, ensure that the country's permanent estate of forest and wildlife resources are managed and enhanced for preservation of vital soil and water resources, conservation of biological diversity and the environment and sustainable production of domestic and commercial produce.

Strategies for ensuring sustainable resource management outlined by the policy include PAS expansion, rehabilitation and development of lands on and outside PAS, protection of endangered plant and animal species, provision of incentives and assistance for conservation, enhancing public and civil society involvement in management through consultative and participatory mechanisms, promoting public awareness and education, and promoting collaborative research and extension. These are in support of the activities identified under the project components.

### **Forest Development Master Plan (FDMP)**

In 1996, the Government of Ghana launched a Forestry Development Master Plan (FDMP) to guide the execution of the FWP to 2020. Four key elements of the Master Plan are: (1) Ensuring the legality of timber; (2) Ensuring sustainable financing for the sector; (3) Improving the quality of forest management and; (4) Ensuring transparency in distribution of resources to forest communities.

### **2012 Forest and Wildlife Policy**

The 1994 Forest and Wildlife Policy was revised in 2011 and subsequently approved in 2012. The policy aims at the conservation and sustainable development of forest and wildlife resources for the maintenance of environmental stability and continuous flow of optimum benefits from the socio-cultural and economic goods and services that the forest environment provides to the present and future generations, whilst fulfilling Ghana's commitments under international agreements and conventions.

The objectives of the policy are to manage and enhance the ecological integrity of Ghana's forest, savannah, wetlands and other ecosystems; to promote the rehabilitation and restoration of degraded landscapes through plantations development and community forestry; to promote the development of viable forest and wildlife based industries and livelihoods; and to promote training, research and technology development that supports sustainable forest management.

This new policy seeks to address the limitations of the preceding policy of 1994 while also taking advantage of emerging global approaches such as Voluntary Partnership Agreements (VPA), Forest Certification and Reducing Emissions from Deforestation and forest Degradation (REDD), which have far reaching implications for the forest and wildlife industry as well as for local livelihoods.

The Forest Master Plan for the 2012 Forest and Wildlife Policy needs to be developed as soon as possible to provide interventions (covering REDD+ mechanism) to be implemented under the new policy.

### **Ghana's Forest and Plantation Strategy 2015 -2040, Draft October 2013**

The goal of this strategy is to achieve sustainable supply of planted forest goods and services to deliver a range of economic, social and environmental benefits. The purpose of the strategy is to optimize the productivity of planted forests by identifying suitable tree species and improving their propagation, management, utilization and marketing. Five strategic objectives crucial for success is the focus of the strategy and they include:

**Strategic Objective 1: (a)** To establish and manage 500,000 ha of forest plantations and undertake enrichment planting of 100,000 ha through the application of best practice principles, by year 2040.

**(b)** To undertake maintenance and rehabilitation of an estimated 235,000 ha of existing forest plantations through the application of best practice principles

**Strategic Objective 2:** To promote large scale and small holder forest plantation investments

**Strategic Objective 3:** To create employment opportunities and sustainable livelihoods in rural communities through forest plantation development

**Strategic Objective 4:** To increase investments in research and development, extension, training and capacity building for forest plantation development and timber utilization

**Strategic Objective 5:** To improve governance in the regulation and management of forest plantations.

**Forestry Commission Act of 1999 (Act 571)** Forestry Commission Act, 1999 (Act, 571) – This Act repealed Act 453 and re-establish the Forestry Commission as a semi-autonomous corporate body and also brought under the Commission, the forestry sector agencies implementing the functions of protection, development, management and regulation of forest and wildlife resources. Section 2 (1) states *The Commission shall be responsible for the regulation of the utilization of forest and wildlife resources, the conservation and management of those resources and the co-ordination of policies related to them.*

**Forest Ordinance of 1927 (Cap 157)** is the principal statute governing the constitution and management of forest reserves in Ghana. The ordinance vests in the central government the power to create forest and protected area reserves. **FORESTS Ordinance (Cap 157)** – This Act provided guidelines for constitution of forest reserves and the protection of forests and other related matters.

**Trees and Timber Decree 1974 (NRCD 273)** – This law prescribed guidelines for participation in the logging/ timber industry and provided for the payment of fees as well as sanctions for non-compliance with the guidelines for participation and also export of unprocessed timber and makes it a criminal offence to fell timber for export without a valid property mark.

**Trees and Timber (Amendment) Law of 1983 (PNDCL 70)** imposes harsher penalties for violation of the Trees and Timber Decree than as provided in the 1974 NRCD 273 Decree.

**Trees and Timber (Amendment) Act 1994 (Act 493)** – This Act reviewed the fees and fines for the renewal of property marks upwards and also introduced export levy for air-dried lumber and logs.

**Forest Protection Decree of 1974 (NRCD 243)** attempts to protect the integrity of forest reserves by prohibiting virtually all activities therein if done without the written authorization of the Forestry Department. **Forest Protection Decree, 1974 (NRCD 243)** – This Act defined forest offences and prescribed sanctions and or penalties for such offences.

**The Forest Protection (Amendment) Act 2002 (Act 624)** – This Act repealed the Forest Protection (Amendment) Law, 1986 (PNDCL. 142), and amends the Forest Protection Decree 1974 (NRCD 243) to provide for higher penalties for offences. It reviewed forest offences fines upwards and introduced joint liability in the commitment and prosecution of forest offences.

*The Forest Protection (Amendment) Act 2002, Act 624 has been in existence for the past twelve or so years. A review is long overdue. The review should consider harsher and deterrent fines and penalties.*

**Concessions Act of 1962 (Act 124)** vests the right to grant timber concessions and the management of all timber resources both on and off reserve in the central government. Section 16 provides for all timber rights to be vested in the president except for preexisting (customary or otherwise) rights in forest reserves or preexisting concessions in off-reserve areas (section 16 (1) – (4)). The Act was repealed by the

Timber Resource Management Act of 1997, with the exception of sections 1 and 16 exempting stool lands from most provisions of the act, and 16, regarding forest reserves and timber concessions.

**Timber Resources Management Act 1997 (Act 547)** – This repealed the Concessions Act, 1962 (Act 124) other than Sections 1 and 16 of Act 124 and provided for the grant of timber rights in a manner that secures the sustainable management and utilization of timber resources. The Act introduces Timber Utilization Contracts (TUCs) for timber harvesting and enhanced benefits for landowners and farmers for harvesting of trees on their land, and provides for payment of royalties in respect of timber operations.

Section 1 provides for prohibition from harvesting timber utilization contract. No person shall harvest timber from any land to which section 4 of this Act applies unless he holds timber rights in the form of a timber utilization contract entered into under this Act in respect of the area of land concerned.

Land subject to timber rights are prescribed under Section 4 as

(1) Timber rights may be granted under a timber utilization contract in respect of-

- (a) lands previously subject to timber rights which have expired and are suitable for re-allocation;
- (b) unallocated public or stool lands suitable for timber operations in timber production areas; and
- (c) alienation holdings.

(2) No timber rights shall be granted in respect of-

- (a) a land with forest plantations;
- (b) land with timber grown or owned by any individual group;
- (c) land subject to alienation holding; or
- (d) lands with farms

without the authorization in writing of the individual, group or owner concerned.

**Timber Resources Management (Amendment) Act 2002, Act 617** This ACT amends the Timber Resources Management Act 1997 (Act 547) to exclude from its application land with private forest plantation; to provide for the maximum duration, and maximum limit of area, of timber rights; to provide for incentives and benefits applicable to investors in forestry and wildlife and to provide for matters related to these.

*The Timber Resources Management Act made it illegal for farmers and other users of off reserve lands to harvest any naturally growing trees for commercial or domestic purposes, even if it is growing on their land. It also prohibited logging without prior authorisation from concerned groups or individuals.*

*Under the Timber Resources Act, farmers and land owners have legal rights to planted trees. When Timber Utilisation Contracts are granted off-reserve, the contract holder is obliged to engage in a Social Responsibility Agreement (SRA) with the concerned communities in the proposed area of logging. According to the SRA, 5% of the stumpage fees should be directed to the community as compensation for damaged crops. However, this fee is often captured during the process and the SRAs have not been sufficiently effective in rewarding the farmers and communities for trees on their lands.*

**Timber Resources Management Regulations of 1998 (LI 1649) and its amendment (LI 1721, Regulation 2003)** establishes regulations for the management of timber pursuant to the Timber Resources Management Act of 1997.

**Interim Measures for Controlling Illegal Harvesting Outside Forest Reserves of 1995** introduces a new system for harvesting off-reserve timber that includes the farmer's rights to veto proposed harvesting and to receive compensation for crop damage.

**Economic Plant Protection Act of 1979** abolishes the grant of timber felling rights in farms having trees, such as cocoa, with economic value. This Act provides for the prohibition of the destruction of specified plants of economic value and for related matters.

*According to the Economic Plants Protection Decree (1979), timber should not be felled where cocoa or other economic plants are cultivated but this is not the case in practice. TUCs are allocated to cover cocoa farms under the Timber Resources Management Act 1997 (Act 547). This is an overlap.*

**Forest Plantation Development Fund Act of 2000 (Act 583)** provides for the grant of financial assistance for the development of private forest plantations on lands suitable for commercial timber production.

**The Forest Plantation Development Fund (Amendment) Act 2002 (Act 623)** –This Act amended ACT 583 to enable plantation growers, both in the public and private sectors to participate in forest plantation development.

#### **4.2.5 Agricultural Policies and Regulations**

##### **Food and Agriculture Sector Development Policy (FASDEP)**

The first Food and Agriculture Sector Development Policy (FASDEP) was developed in 2002 as a framework for the implementation of strategies to modernization of the agricultural sector. In 2006, after nearly four years of its implementation, the FASDEP was revised to reflect lessons learned and to respond to the changing needs of the sector. The revised policy of 2006 (FASDEP II) encourages the formation of inter-ministerial teams to ensure environmental sustainability in agricultural production systems. FASDEP II emphasizes the sustainable utilization of all resources and commercialization of activities in the sector with market-driven growth in mind and with emphasis on environmental sustainability.

##### **Medium Term Agriculture Sector Investment Plan (METASIP)**

The Government of Ghana developed the Medium Term Agriculture Sector Investment Plan (METASIP) to implement the Food and Agriculture Sector Development Policy (FASDEP II) over the medium term 2011-2015. The METASIP comprises of six key programmes:

- (i) Food security and emergency preparedness
- (ii) Improved growth in incomes
- (iii) Increased competitiveness and enhanced integration into domestic and international markets
- (iv) Sustainable management of land and environment
- (v) Science and technology applied in food and agriculture development
- (vi) Enhanced institutional coordination

##### **Tree Crop Policy**

GPRS I and GPRS II emphasized the need for the country to make tree crops a pivot of the country's development agenda. GPRS II stated that tree crop development should be used as a strategy to reduce poverty. The tree crops listed include cashew, citrus, cocoa, coconut, coffee, dawadawa, kola, mangoes, oil palm, rubber tree, and shea. Others include acacia (Gum Arabic), avocado, baobab, and tamarind.

### **The Ghana Irrigation Policy**

The objective of irrigation policy is to expand and improve the efficiency of irrigation to support agricultural development and growth. It will be pursued with principles of sustainability in operation and maintenance, and use of natural resources, equitable access by women to benefits of irrigation, and the rights to participate in irrigation management.

The policy is designed to address four key ‘problem’ areas concerning the formal, informal and commercial irrigated sub-sectors. These problems are: low agricultural productivity and slow rates of growth, constrained socio-economic engagement with land and water resources, environmental degradation associated with irrigated production and lack of irrigation support services. The goal of the policy is to achieve sustainable growth and enhance performance of irrigation contributing fully to the goals of the Ghanaian agriculture sector. The targets of the Ghana Irrigation Policy are to attain national food security, increase livelihood options, intensify and diversify production of agricultural commodities.

*Existing agricultural policies, programmes and regulations are consistent with the REDD+ principles and proposed REDD+ strategy options.*

### **4.2.6 Mining and Mineral Policies and Regulations**

#### **National Mining Policy –June 2007 draft**

The mining policy has a section on environmental regulation of mining and the objective stated under this section is to achieve a socially acceptable balance, between mining and the physical and human environment and to ensure that internationally accepted standards of health, mining safety and environmental protection are observed by all participants in the mining sector.

It mentions also that procedures for the assessment of applications will take into consideration inter-agency consultation. It will establish arrangements under which the Minerals Commission will consult with the EPA, the Forestry Commission, District Assemblies and other relevant departments and agencies during the evaluation of applications for mineral rights.

The policy mentions under land use that *In the case of forest reserves the Forestry Commission must explicitly waive any restrictions to entry before any mining activity can take place.*

**Mining and Minerals Act of 2006 (Act 703)** (*repeals and replaces Minerals and Mining Law 1986, Minerals and Mining (Amendment) Act of 1994 among others*). It vests the ownership of all minerals in its natural state in, under or upon land in Ghana, rivers, streams, water-courses throughout the country, the exclusive economic zone in the President in trust for the people of Ghana.

The Minerals and Mining Act represent the central pieces of legislation for the exploitation of minerals. The Act establishes detailed rules regarding the ownership of minerals, mineral rights, various licenses required, royalties/rentals/fees, surface rights and compensation issues among others.

#### Relevant sections

##### *Land available for application for mineral right*

Section 3: Land in the country may be made the subject of an application for a mineral right in respect of a mineral specified in the application, other than land which is

(a) The subject of an existing mineral right in respect of the specified mineral, or



- (b) Expressly reserved, by or under this Act or any other enactment from becoming the subject of a mineral right

#### *Forestry and environmental protection*

Section 18 (1): Before undertaking an activity or operation under a mineral right, the holder of the mineral right shall obtain the necessary approvals and permits required from the Forestry Commission and the Environmental Protection Agency for the protection of natural resources, public health and the environment.

#### *Surface right*

Section 72 (3) The lawful occupier of land within an area subject to a mineral right shall retain the right to graze livestock upon or to cultivate the surface of the land if the grazing or cultivation does not interfere with the mineral operations in the area.

Under Section 72 (5), the owner of a mining lease shall in the presence of the affected person and the LVD representative carry out a survey of the crops and produce a crop identification map for compensation in the event that mining activities are extended to the areas.

*Section 3 reveals that unless there is a law preventing the use of a land for some specified purpose, any land in the country may be the subject of application for a mineral right.*

*Section 72 (1) seems to give the holder of a mining lease the upper hand with regard to the surface right. It is a source of conflict between mining firms and numerous farmers/farming communities with some surface rights within mining concessions.*

*Current crop compensation rates cover known food/cash crops and some economic trees such as teak. There are no rates for naturally grown trees or timber species. Shade trees in cocoa farms are usually not counted as crops and so do not attract compensation. Forestry officials salvage or harvest such timber trees in cocoa farms prior to destruction by mining companies.*

### **Mining in Forest Reserves**

In 1997, a policy decision was taken that mineral exploration activities would be allowed within at least 2% of Production Forest Reserves. Guidelines for mining in forest Reserves were developed and implemented. The Liaison Group overseeing the review of the guidelines for mining in production forest reserves (EPA, FSD, WRC, Chamber of Mines, Minerals Commission) has since 2013 initiated the procurement process to engage a consultant to review the existing guidelines for mining in production forest reserves.

*The policy of mining in production forest reserves is not consistent with REDD+ principle of conservation of forest.*

### **4.2.7 Energy Policies and Regulations**

#### **Strategic National Energy Plan, 2006**

The SNEP reiterates the sector Ministry's vision to develop an 'Energy Economy' that would ensure sustainable production, supply and distribution of high quality energy services to all sectors of the economy in an environmentally friendly manner for Ghana's future while making significant contribution to the country's export earnings. In this regard, the following ten (10) broad objectives are highlighted by the policy:

- Stimulate economic development by ensuring that energy plays a catalytic role in Ghana's economic development.
- Consolidate, improve and expand existing energy infrastructure.
- Increase access to modern energy services for poverty reduction in off-grid areas.
- Secure and increase future energy security by diversifying sources of energy supply.
- Accelerate the development and utilization of renewable energy and energy efficiency technologies.
- Enhance private sector participation in energy infrastructure development and service delivery.
- Minimize environmental impacts of energy production, supply and utilisation.
- Strengthen institutional and human resource capacity and R & D in energy development.
- Improve governance of the Energy Sector.
- Sustain and promote commitment to energy integration as part of economic integration of West African states.

### **National Energy Policy, 2010**

This National Energy Policy of February 2010 outlines the energy sector goals, challenges and actions. Within the context of energy sector vision, the goal of the energy sector is to make energy services universally accessible and readily available in an environmentally sustainable manner. The policy objectives to achieve this goal are to:

- I. Secure long term fuel supplies for the thermal power plants;
- II. Reduce technical and commercial losses in power supply;
- III. Support the modernization and expansion of energy infrastructure to meet growing demands and ensure reliability;
- IV. Increase access to modern forms of energy;
- V. Improve the overall management, regulatory environment and operation of the energy sector;
- VI. Minimise the environmental impacts of energy supply and consumption through increased production and use of renewable energy and make energy delivery efficient;
- VII. Ensure cost recovery for energy supply and delivery;
- VIII. Ensure the productive and efficient use of energy;
- IX. Promote and encourage private sector participation in the energy sector; and
- X. Diversify the national energy mix by promoting renewable energy sources nuclear and coal.

The goals of the power sub-sector are to increase installed power generation capacity quickly from about 2,000 MW to 5,000 megawatts (MW) by 2015, and increase electricity access from the current level of 66% to universal access by 2020.

The goals of the renewable energy sub-sector are to increase the proportion of renewable energy in the total national energy mix and ensure its efficient production and use. The Renewable Energy sub-sector covers biomass, mini hydro, solar and wind resources. Under Hydro Power Resources Development, the objective is to

- Complete the development of the Bui Hydropower Project on the Black Volta; and
- Support the development of small and medium scale hydro power projects on other rivers, including the Western Rivers (Ankobra, Tano and Pra), River Oti, and the White Volta.

Small scale hydropower project refers to a hydropower project with generating capacity between 1 MW and 10 MW. Medium scale hydropower project refer to a hydropower project with generating capacity between 10 MW and 100 MW.



*Most of the rivers identified for small and medium scale hydro power projects (Ankobra, Tano and Pra) have forests or forest reserves along sections of the river banks. Careful planning and choice of technology is required during the development of any hydro-electric dam in order to minimize inundation of forest along these water bodies. The policy is not consistent with REDD+ principle of conservation of forest.*

### **Energy Commission Act 1997, Act 541**

The Ghana Energy Commission Act 1997 (Act 541) sets up the Energy Commission and defines its functions as relating to the regulation, management, development and utilization of energy resources in Ghana and co-ordinate policies in relation to them.

### **Renewable Energy Act 2011, Act 832**

The object of the Act is to provide for the development, management and utilization of renewable energy sources for the production of heat and power in an efficient and environmentally sustainable manner. It also requires under Section 8 that a person shall not engage in a commercial activity in the renewable energy industry without a license and describe the commercial activities in the renewable energy industry to include (a) production, (b) transportation, (c) storage, (d) distribution/sale/marketing, (e) importation, (f) exportation/re-exportation, and (g) installation/maintenance.

### Sustainability of woodfuel production

Under Section 44, it is stated that, *The Commission shall collaborate with*

- (a) the Forestry Commission,*
- (b) the Environmental Protection Agency*
- (c) the relevant Metropolitan, Municipal or District Assembly, and*
- (d) any other relevant institutions to ensure the development and implementation of programmes to sustain wood fuel production and consumption*

### **Licence Manual for Service providers in the renewable energy industry (Charcoal export license), September 2012**

This Manual provides guidelines for the application and grant of licence to service providers to conduct business in the renewable energy industry and for related matters. The Licence Manual requires Charcoal Production Licence to be issued to an applicant who wishes to produce more than 100 tonnes of charcoal per annum and the charcoal production license duration is 20 years. Charcoal export license gives authority to one to export charcoal and the license duration is one year.

### Acquisition of charcoal export licence –Required submissions relevant to REDD+

- |               |  |
|---------------|--|
| Exhibit CE4 - | An Environmental Permit/Certificate issued by the EPA.   |
| Exhibit CE5 - | Site plan, and location of charcoal production site.   |
| Exhibit CE6 - | Location and source of wood for the charcoal indicating whether sawmill residue, off-cuts, etc.  |
| Exhibit CE7 - | Agreement with respect to supply of wood waste or a certification letter from the Forestry Commission indicating the right of use of forest /woodlot planted for this purpose. |

### Suspension and Cancellation of Licence (Section 2.16 of the Manual)

The Commission may suspend or cancel a licence where a licence holder fails to comply with any of the conditions stipulated in the licence or relevant provisions in the Renewable Energy Act, (Act 832), Energy Commission Act, (Act 541) and associated Regulations.

### Review of decisions (Section 6.1 of the Manual)

The Renewable Energy Act 2011 (Act 832) and Energy Commission Act 1997 (Act 541) provide for:

- (a) Persons who are dissatisfied with a decision of the Commission in relation to a licence application to have the decision reviewed by the Commission; and
- (b) Persons who have had a decision reviewed by the Commission but are dissatisfied with the results of the review, to appeal the decision to the Minister responsible for Energy who shall within 30 days of receipt of the complaint make a decision. If dissatisfied with the Decision of the Minister, or where the 30 days expire without a decision, the person may within 14 days after the decision pursue the matter in the High Court (Refer to Sections 17 & 18 of the Renewable Energy Act).

*The charcoal export license manual does not indicate clearly which offences warrant suspension and which offences warrant cancellation of licence. It is silent on how long a person can be suspended and if one's licence is cancelled whether he/she is eligible for re-application.*

## **4.2.8 Water Policies and Regulations**

### **National Water Policy, 2007**

The National Water Policy, approved in June 2007, is to provide the framework for the sustainable development of water resources in Ghana. The overall goal of the policy is to “achieve sustainable development, management and use of Ghana’s water resources to improve health and livelihoods, reduce vulnerability while assuring good governance for present and future generations.”

The relevant principles for climate variability and change include: (i) recognizing water as a finite and vulnerable resource, given its multiple uses; (ii) coordinating water resources planning with land use planning; and (iii) adopting the river basin (or sub-basin) as a planning unit. The policy objectives are: (i) to minimize the effects of climate variability and change; and (ii) to institute measures to mitigate the effects of, and prevent damage caused by extreme hydrological occurrences (floods and droughts).

*The Water Policy factors climate change issues into consideration and is generally consistent with REDD+.*

### **Water Resources Commission (WRC Act 1996, Act 522)**

The Water Resources Commission Act, 1996 (Act 522) establishes and mandates the Water Resources Commission (WRC) as the sole agency responsible for the regulation and management of the utilisation of water resources and for the co-ordination of any policy in relation to them.

Section 13 prohibits the use of water (divert, dam, store, abstract or use water resources or construct or maintain any works for the use of water resources) without authority. Section 16 empowers the Commission to grant Water Rights (water use permits) to prospective users. The Act states under Section 24 that any person who pollutes or fouls a water resource beyond the level that the EPA may pre-scribe, commits an offence and is liable on conviction to a fine or a term of imprisonment or both.

**Water Use Regulations, 2001 (LI 1692)**

The Water Use Regulations, 2001 (LI 1692) list such activities for which water use permit is required and this includes domestic, commercial, municipal, industrial water use among others. The Regulations also prescribe the raw water charges and processing fees to be paid by prospective water users with respect to the water use permits.

**Buffer Zone Policy, 2014**

The Water Resources Commission (WRC) launched a national policy document on Riparian Buffer Zone Protection for managing freshwater bodies in the country in May 2014. It aims at providing comprehensive measures and actions that would guide the creation of vegetative buffers for the preservation and functioning of the nation's water bodies and vital ecosystems.

Recommended buffer widths for water bodies are municipal reservoir shoreline protective areas such as Weija Dam and Lake Bosomtwe covering 60 to 90 metres; major perennial rivers/streams such as the Volta, Offin and Tano, 10 to 60 metres and streams within forest reserves, 10 to 50 metres.

**4.2.9 Environmental Protection & Assessment Policies and Regulations****The Environmental Protection Agency (EPA) Act, 1994 (Act 490)**

This Act establishes and mandates the EPA to seek and request information on any undertaking that in the opinion of the Agency can have adverse environmental effects and to instruct the proponent to take necessary measures to prevent the adverse impacts. The EPA Act, 1994 (Act 490) gave mandate to the Agency to ensure compliance of all investments and undertakings with laid down Environmental Assessment (EA) procedures in the planning and execution of development projects, including compliance in respect of existing ones.

Part II of the Act 490 deals with pesticides control and management and this was formally an Act on its own (Pesticides Control and Management Act of 1996, Act 528). This section of Act 490 provides the rules for registration, pesticides classification, approval, clearance, using, disposing of and non disclosure of confidential information, the granting of licence, labeling and pesticides inspections.

**The Environmental Assessment Regulations of 1999, LI 1652**

The Environmental Assessment Regulations of 1999, LI 1652 enjoins any proponent or person to register an undertaking with the Agency and obtain an Environmental Permit prior to commencement of the project. It indicates the EIA process and provides list of environmentally sensitive areas as well as possible undertakings requiring EIA.

**National Environmental Policy (NEP), 2013**

The NEP presents a road map to address major environmental threats jeopardizing the natural and common resource base of the country and has integrated the most urgent environmental concerns of present time to provide clear strategies for overcoming existing hurdles. It validates the Strategic Environmental Assessment (SEA) process as a tool for mainstreaming environment into all government policies, programmes and projects.

**National Climate Change Policy (NCCP), 2013**

The Policy is built on five systematic pillars: Governance and Co-ordination, Science, Technology and Innovation, Finance, International Cooperation, Information Communication and Education and

Monitoring and Reporting. The objective of the Policy is to mitigate and ensure an effective adaptation in key sectors of the economy, such as agriculture and food security, natural resources management, energy, industry and infrastructure among others. The National Climate Change Policy Framework has three objectives: low carbon growth, effective adaptation to climate change, and social development.

*The environmental protection/climate change policies and regulations are consistent with REDD+ principles and objectives.*

#### **4.2.10 Investment, Employment, Labour, Safety, Gender, Local government, Chieftaincy and others**

*Generally, the identified laws reviewed under this section are not in conflict with forest sector laws or REDD+ principles and objectives and will have an overall positive influence on REDD+.*

##### **National Employment Policy, 2012-2016**

The National employment policy indicates that poverty is still high at about 28.5 per cent and that there is a strong correlation between the employment situation and poverty. The unemployment rate of the country increased from 2.8 percent in 1984 to an unacceptably high rate of 10.4 percent in 2000 before declining to 3.6 percent in 2005/2006.

The policy states that the key source of demand for labour emanates from the productive sectors of the economy, namely, agriculture, industry and service. One of the key strategies of the employment policy is to promote farm and non-farm rural employment through modernisation of agriculture, improving the productivity of farmers and contract farming arrangements, promoting effective linkages between farm and non-farm activities among others.

*Though forestry and tree plantation activities as key sources of employment and livelihoods are not directly mentioned in the policy, employment issues are key to REDD+*

##### **National Gender and Children Policy**

The national gender and children policy is to ensure that women and children become critical beneficiaries of all development plans and programmes. Two key strategies to achieve the policy objective include sensitization on gender issues at all levels; and Promoting a Gender and Development (GAD) approach that is based on the understanding of gender roles and social relations of women and men as well as the Women in Development (WID) approach which focuses on women specifically.

##### **Ghana Investment Promotion Centre Act 1994, Act 478**

The Ghana Investment Promotion Centre Act of 1994, Act 478 requires that the Ghana Investment Promotion Centre, the Government Agency responsible for the encouragement, promotion, co-ordination of private investment in the Ghanaian economy, must in its appraisal of proposed investment projects or enterprises, "...have regard to any effect the enterprise is likely to have on the environment and the measures proposed for the prevention and control of any harmful effects to the environment".

##### **Local Government Act 1993, Act 462**

This Act establishes and regulates the local government system and gives authority to the RCC and the District Assembly to exercise political and administrative power in the Regions and District, provide guidance, give direction to, and supervise all other administrative authorities in the regions and district respectively. The Assembly is mandated to initiate programmes for the development of basic

infrastructure and provide municipal works and services as well as be responsible for the development, improvement and management of human settlements and the environment in the district.

### **Local Government Service Act, 2003, Act 656**

This Act establishes a Local Government Service to secure the effective administration and management of local government in the country. The Service is to among other things:

(a) provide technical assistance to District Assemblies, and Regional Coordinating Councils to enable the District Assemblies and the Regional Co-ordinating Councils effectively perform their functions and discharge their duties in accordance with the Constitution and the Local Government Act, 1993 (Act 462).

The Service comprises of persons holding non-elected public office in (a) Regional Co-ordinating Councils, (b) District Assemblies, (c) Sub-Metropolitan District Councils, Urban, Zonal, Town and Area Councils, (d) the Secretariat of the Service, and (e) any other persons employed for the Service.

### **Chieftaincy Act 759 of 2008**

The Chieftaincy Law (Act 759) of 2008, replaces the old Chieftaincy Law (Act 370) of 1971. It provides for the composition, membership and functions of the National House of Chiefs, Regional House of Chiefs, Traditional and Divisional Councils, chieftaincy matters among other things.

### **Factories, Offices and Shops Act, 1970 (Act 238)**

The law mandates the Factories Inspectorate Department to register factories and ensure that internationally accepted standards of providing safety, health and welfare of persons are adhered to. A factory is defined to include any premise (in or out of a building) in which one or more persons are employed in manual labour etc. The Act makes provision of among others, the notification of accidents/dangerous occurrences including safe passages and the prevention of fires etc.

*The Act is skewed towards industrial or manufacturing or processing companies and does not provide health and safety coverage for afforestation/ tree plantation activities. There is need for a separate health and safety policy for the forestry sector.*

### **Social Security Law, 1991 (PNDCL. 247)**

This Law establishes a trust fund to provide social protection to the working population for various contingencies such as old age, invalidity, and such other contingencies as may be specified by law. Section 20 of the law indicates that the law shall apply to (a) every employer of an establishment and to every worker employed therein; (b) every other employer and worker to whom the Social Security Decree, 1972 (NRCD 127) applied immediately before the commencement of this Law, and (c) all self employed persons who opt to join the scheme.

### **National Pensions Act, 2008, Act 766**

The Act aims to ensure retirement income security for all Ghanaian workers and the ultimate goal is the creation of a unified pension structure and the introduction of a three-tier pension scheme comprising:

1. First Tier – A mandatory basic social security scheme to be managed by SSNIT
2. Second Tier – A mandatory fully-funded and privately managed occupational scheme
3. Third Tier – A voluntary fully-funded and privately managed provident fund and personal pension scheme.

Under the Act, the worker contributes 5.5% of his/her basic salary and the employee adds 13% of the worker's basic salary, making a total of 18.5%. Out of the 18.5%, the employer shall remit 13.5% within fourteen days after the end of each month to SSNIT. Subsequently, SSNIT also remits 2.5% out of the 13.5% to National Health Insurance Authority (NHIA) for the member's Health Insurance. The employer also remits 5% out of the 18.5% to a Private Scheme Manager for the second tier. The first tier mandatory scheme insures the worker against old age, invalidity, and death.

### **The Labour Act 2003, Act 651**

The Act amends and consolidates laws relating to labour, employers, trade unions and industrial relations, and to the establishment of a National Labour Commission. The law spells out clearly the rights and responsibilities of workers and employers thereby seeking to prevent industrial conflicts. The law promotes collective bargaining and makes adequate provision for tripartism. The problem however is the poor compliance and enforcement that has characterised Ghana's labour legislation. Section 118(1) of the Labour Act 2003 (Act 651) stipulates that it is the duty of an employer to ensure that every worker employed works under satisfactory, safe and healthy conditions.

### **Alternative Dispute Resolution Act 2010 (Act 798)**

The purpose of the Act is to ".....provide for the settlement of disputes by arbitration, mediation and customary arbitration, to establish an Alternative Dispute Resolution Centre and to provide for related matters." The Act further defines Alternative Dispute Resolution "as the collective description of methods of resolving disputes otherwise than through the normal trial process" (Section 135). The ADR Act covers both domestic and international arbitration in Ghana and the enforcement of both domestic and foreign arbitral awards within the jurisdiction.

Under Section 1, Application, the Act states that *This Act applies to matters other than those that relate to*

*(a) the national or public interest;*

*(b) the environment;*

*(c) the enforcement and interpretation of the Constitution; or*

*(d) any other matter that by law cannot be settled by an alternative dispute resolution method.*

*The ADR Act does not apply to matters on the environment as indicated in Section 1b. REDD+ should push for amendment or inclusion of some environmental matters in the scope of application under ADR with regard to REDD+ related issues where necessary.*

### **The Children's Act 1998, Act 560**

The Act spells out the rights of the child, quasi-judicial/judicial child adjudication, parentage/custody/access/maintenance, fosterage/ adoption and employment of children issues. The Act defines a child as a person below the age of 18 years. The minimum age for admission of a child to employment is fifteen years and the minimum age for the engagement of a person in hazardous work is eighteen years. No person shall engage a child in exploitative labour and labour is exploitative of a child if it deprives the child of its health, education or development.

### **Workmen's Compensation Law, 1987**

The law holds employers responsible for the payment of compensation to workmen for personal injuries caused by accidents arising out and in the course of their employment.

*The law is applicable to the forestry sector under Section I of this Law. The forestry sector is not immune to accidents. It is an area which exposes its workers to a lot of risks and accidents continue to occur within the sector.*

#### **Intestate Succession Law, PNDCL 111 (1985)**

Section 2 (1) states that A person shall be deemed to have died intestate under this Law if at the time of his death he had not made a will disposing of his estate. The law makes provision for devolution of estate for surviving spouse, surviving child, surviving parent as well as portion of the estate to be devolved in accordance with customary law. The Law does not apply to any stool, skin or family property. Currently, the Intestate Succession Law (Amendment) Bill is before Parliament and gender based groups are advocating for the elimination of all forms of discrimination against women. Under article 22 of the 1992 Constitution, an obligation is imposed on Parliament to enact legislation to regulate the property rights of spouses and therefore the amendment is in the right direction.

#### **Ghana National Fire Service Act, 1997**

This act is to re-establishes the Ghana National Fire Service to provide for the management of undesired fires and to make provision for related matters.

#### **The Fire Precaution (Premises) Regulations 2003, LI 1724**

The Fire Precaution (Premises) Regulations 2003 (LI 1724) requires all premises intended for use as workplaces to have Fire Certificates.

**Control of Bush Fires Law of 1983 (PNDCL 46)** seeks to control the setting of bush fires by criminalizing the intentional, reckless, or negligent causing of such fires and holding the offender liable for all consequences of the fire.

#### **Control and Prevention of Bushfire law, PNDCL 229**

Section 2 defines “starting of a bushfire”. A person starts a bushfire if an action of that person results in the uncontrolled burning of a farm, forest or grassland. The Chief Conservator of Forests or the Chief Game and Wildlife Officer may authorize starting of fires by authorized officers in Conservation Areas under section 4. In each district a Bushfire Control Subcommittee shall be established in accordance with section 5. The Subcommittee may make by-laws for the control of bushfires, indicate burning seasons, draw up burning programmes set up bushfire control units and take other measures specified in section 6. Other sections concern duties of private parties and the National Fire Service in respect of bushfire control. The National Fire Service is responsible, on the coming into force of this Act, for the training of town, area and unit fire volunteer squads.

#### **Ghana Meteorological Agency Act 2004, Act 687**

This ACT establishes the Ghana Meteorological Agency, which replaces the Meteorological Services Department. The Agency is to provide meteorological information, advice, and warnings for the benefit of agriculture, civil and military aviation among others to mitigate the effects of natural disasters such as floods, storms and droughts on socio-economic development and projects. The Agency is key to providing accurate data on climatic data which are relevant for establishing climate change trends.



### 4.3 Institutional Framework

The major institutions with significant influence or involvement with REDD+ related activities are described below.

#### 4.3.1 *Ministry of Lands and Natural Resources*

The Ministry has the oversight responsibility for the land and natural resources sector and its functions include: Policy formulation, Co-ordination, Monitoring and Evaluation, Validation of Policies, Programmes and Projects, Supervision of Sector Departments and Agencies; and Negotiations with Development Partners.

The Ministry's aims and objectives are:

- Develop and manage sustainable lands, forest, wildlife and mineral resources;
- To facilitate equitable access, benefit sharing from and security to land, forest and mineral resources;
- Promote public awareness and local communities participation in sustainable forest, wildlife and land use management and utilization;
- To review, update, harmonise and consolidate existing legislation and policies affecting land, forest and mineral resources;
- To promote and facilitate effective private sector participation in land service delivery, forest, wildlife and mineral resource management and utilization;
- Develop and maintain effective institutional capacity and capability at the national, regional, district and community levels for land, forest, wildlife and mineral service delivery; and
- Develop and research into problems of forest, wildlife, mineral resources and land use.

MLNR is the sector Ministry to which the Forestry Commission reports. It is also responsible for Ghana's Forest Investment Program (FIP). MLNR will serve on the Program's Coordination and Management Committee to ensure integration with FIP projects and related activities.

#### 4.3.2 *Ministry of Finance (MoF)*

The Ministry is responsible for:

- Mobilization of external and internal resources
- Allocation of resources to all sectors of the economy
- Ensuring sustainability of public debt
- Preparation and implementation of the annual budget and economic and financial statement of Government
- Management of public expenditure
- Development and implementation of financial sector policies

The ministry's main responsibility of budgeting and releasing funds for government/public sector spending and will be responsible for the overall financial administration of the program. MoF is the sector ministry to which Cocoa Board reports. It is the Chair of the Technical Coordination Committee- Plus (TCC+), which oversees the Natural Resource Environmental Governance (NREG) program that has links to the REDD+.



#### **4.3.3 Forestry Commission**

The Forestry Commission of Ghana is responsible for the regulation of utilization of forest and wildlife resources, the conservation and management of those resources and the coordination of policies related to them. The Commission embodies the various public bodies and agencies that were individually implementing the functions of protection, management, the regulation of forest and wildlife resources. These agencies currently form the divisions of the Commission:

- Forest Services Division (FSD)
- Wildlife Division
- Timber Industry Development Division (TIDD)
- Wood Industries Training Centre (Forestry Commission Training School)
- Resource Management Support Centre (RMSC)

The Climate Change Unit, established in 2007 as a unit of the Commission has a mandate to manage forestry-sector initiatives related to climate change mitigation, including REDD+. It hosts the National REDD+ Secretariat and serves as the National REDD+ focal point.

It is the aim of the Commission to be a corporate body of excellence in the sustainable development management and utilization of Ghana's forest and wildlife resources meeting both national and global standards for forest and wildlife resource conservation and development.

#### **4.3.4 Lands Commission**

The Lands Commission manages public lands and any other lands vested in the President by the Constitution or by any other enactment or the lands vested in the Commission. The Commission advises the Government, local authorities and traditional authorities on the policy framework for the development of particular areas to ensure that the development of individual pieces of land is co-ordinated with the relevant development plan for the area concerned.

The Commission formulates and submits to Government recommendations on national policy with respect to land use and capability; advice on, and assist in the execution of, a comprehensive programme for the registration of title to land throughout the Republic. Currently, the Commission has the following divisions:

- Survey and Mapping;
- Land Registration;
- Land Valuation; and
- Public and Vested Lands Management.

#### **4.3.5 Office of the Administrator of Stool Lands (OASL)**

The functions of the Office of the Administrator of Stool Lands as provided for under Article 267(2) of the 1992 Constitution and Sections 2, 9 and 10 of Act 481 of 1994 are:

- Establishment of a Stool Lands account for each stool into which shall be paid all rents, dues, royalties, revenue or other payments whether in the nature of income or capital from stool lands.
- Collection of stool lands revenue and accounting for same to the beneficiaries.

- Disbursement of stool land revenue to beneficiaries in the proportion of 25% to the Stool through the traditional authority, 20% percent to the traditional authority and 55% to the district assembly within the area of authority of which the stool land is situated
- Consultation with stools and other traditional authorities on matters relating to the administration and development of stool lands.
- Co-ordination with Lands Commission and other relevant Public Agencies and other stakeholders in preparing policy framework for the rational and productive development of stool lands.
- Facilitation of the establishment of Land Secretariats for traditional authorities.
- Research into stool land issues and collection and storage of relevant information and data on stool lands and making same available.

#### **4.3.6 Minerals Commission (MC)**

In broad terms, the responsibility vested with the Mineral Commission is to oversee regulation and management of the utilization of the mineral resources of Ghana, and to co-ordinate the policies in relation to them. The main functions of the MC include the following:

- Formulate recommendations of national mining policies and monitor their implementation
- Monitor the operations of all bodies or establishments with responsibility for minerals and report to the Minister;
- Receive and assess development agreements relating to minerals and report to Parliament;
- Secure comprehensive data collection on national mineral resources; and
- Perform such other functions as the Minister may assign to it.

A foremost responsibility of the MC is the administration of minerals rights. For this purpose, the MC maintains a cadastral system and a register of mineral rights. The various mining and mineral permits include reconnaissance license, prospecting license, and mining lease. Actual decisions in matters of mineral rights are taken by the Minister of Mining, but only after recommendation of the MC.

For the promotion and administration of Small Scale Mining, the MC maintains District Offices. The control of illegal small scale mining activities popularly known as *galamsey* is a national security issue. The nation has been overwhelmed by these *galamsey* activities and successive governments have not been able to bring it under control or get rid of it. The recent Presidential Task Force has however, brought some success to the control of *galamsey* activities since 2012 but only time will tell with regard to its sustainability. The effective control of *galamsey* activities will require the involvement and collaboration of all stakeholders especially the traditional authorities and district assemblies.

#### **4.3.7 Ministry of Environment, Science, Technology and Innovation**

The overall objective of the ministry is to ensure accelerated socio-economic development of the nation through the formulation of sound policies and a regulatory frame work to promote the use of appropriate environmentally friendly, scientific and technological practices and techniques.

#### **4.3.8 Environmental Protection Agency**

As the law stipulates, the EPA is statutorily mandated to ensure that the implementation of all undertakings do not harm the environment. The Agency has eleven (11) regional offices, which are accessible and staffed and equipped to perform its functions. It is expected that sub-projects that will require the preparation of EIA will abide by statutory requirements and the implementing institutions will

liaise sufficiently with the Agency to ensure compliance. The EPA is the National Focal Point for Climate Change and is responsible for all national communications to the UNFCCC.

#### **4.3.9 FORIG**

Forestry Research Institute of Ghana (FORIG) is one of the 13 institutes of the Council for Scientific and Industrial Research (CSIR). By Act of Parliament (Act 405) the Institute was transferred from the CSIR to the Forestry Commission in 1980. In 1993, by another Act of Parliament (Act 453) the Institute was reverted to the CSIR. The goals of the Institute include to:

1. Conduct high quality user-focused forestry research that generates scientific knowledge and appropriate technologies.
2. Disseminate forestry related information for the improvement of the social, economic and environmental well-being of the Ghanaian people.
3. To enhance the sustainable development, conservation and efficient utilisation of Ghana's forest resources.
4. To foster stronger linkages through collaborative research across disciplines among its scientists, stakeholders and external Institutions.

The Institute has research centres in 5 research stations strategically located in one or more ecological zones of the country – Benso in the wet/moist evergreen zone in the Western Region, Kubease, Amantia and Abofour respectively in the moist semi-deciduous-N/E, moist semi-deciduous-S/E and dry semi-deciduous in the Ashanti Region; and Bolgatanga in the northern savanna.

#### **4.3.10 COCOBOD and CRIG**

Ghana Cocoa Board (COCOBOD) is directly under the Ministry of Finance and the functions of COCOBOD centre on the production, research, extension, internal and external marketing and quality control. The functions are classified into two main sectors; Pre-harvest and Post-harvest. The Pre-harvest Sector functions are performed by the Cocoa Research Institute of Ghana (CRIG), the Seed Production Unit (SPU) and the Cocoa Swollen Shoot Virus Disease Control Unit (CSSVDCU) deal with fundamental issues on actual cocoa production at the farm gate level.

The Post-harvest Sector functions are undertaken by the Quality Control Division (QCD) and the Cocoa Marketing Company (CMC) Limited. The Post-harvest activities of COCOBOD start with quality control measures of QCD which farmers must observe to facilitate the acceptance of their produce at the buying centres by the licensed buying companies engaged in internal marketing of cocoa at the time.

CRIG is the research wing and a division of COCOBOD. CRIG's research policy and directions are underpinned by the following outcomes:

- Increase productivity
- Facilitation of environmental sustainability
- Adaptation of farming practices to climate change
- Farmers' find CRIG'S mandated crops attractive

#### **4.3.11 Ministry of Food and Agriculture**

The Ministry of Food and Agriculture is the ministry responsible for the development and growth of agriculture in the country. The primary roles of this ministry are the formulation of appropriate

agricultural policies, planning and coordination, monitoring and evaluation within the overall economic development. The Ghana Irrigation Authority (GIDA) falls under this ministry. MoFA mandate relating to forestry include provision of extension services on agro-forestry and tree crops.

#### **4.3.12 Water Resources Commission (WRC)**

The Water Resources Commission (WRC) was established by an Act of Parliament (Act 522 of 1996) with the mandate to regulate and manage Ghana's Water Resources and co-ordinate government policies in relation to them. The Act stipulates that ownership and control of all water resources are vested in the President on behalf of the people. The functions of the WRC as established under Act 522 among other things are to:

- Formulate and enforce policies in water resources conservation, development and management in the country;
- Coordinate the activities of the various agencies (public and private) in the development and conservation of water resources;
- Enforce, in collaboration with relevant agencies, measures to control water pollution; and
- Be responsible for appraising water resources development project proposals, both public and private, before implementation.

#### **4.3.13 Ministry of Energy**

The Ministry of Energy is responsible for formulating, monitoring and evaluating policies, programmes and projects in the energy sector. It is involved with the promotion of the development of small and medium scale hydro power projects on the Pra River in particular. It is also involved with the implementation of the National Electrification Scheme (NES) which seeks to extend the reach of electricity to all communities in the long term.

#### **4.3.14 Energy Commission**

The Energy Commission and the Public Utilities and Regulatory Commission (PURC) regulate the electricity supply industry. The Energy Commission, in addition to being responsible for technical regulations in the power sector, also advises the Minister for Energy on matters relating to energy planning and policy.

#### **4.3.15 Ghana National Fire Service**

The objective of the Service is to prevent and manage undesired fire. For the purpose of achieving its objective, the Service shall organise public fire education programmes to create and sustain awareness of the hazards of fire, and heighten the role of the individual in the prevention of fire; provide technical advice for building plans in respect of machinery and structural layouts to facilitate escape from fire, rescue operations and fire management.

The GNFS has the rural fire department which is expected to take care of bush/wild fires. However, the department has not performed effectively especially in the three northern regions where bush/wild fires are ripe due to lack of logistics and or funds.

#### **4.3.16 NADMO**

The National Disaster Management Organisation (NADMO) seeks to enhance the capacity of society to prevent and manage disasters and to improve the livelihood of the poor and vulnerable in rural communities through effective disaster management, social mobilisation and employment generation. The strategic objectives of NADMO include:

- To improve Human and Institutional Capacity.
- To promote Disaster Risk Reduction (DRR) and Climate Change Risk Management through the establishment of National and Regional Platforms for all Stakeholders.
- To strengthen Disaster Prevention and Response Mechanisms.
- To link NADMO's Disaster Prevention and Management Programmes to the GPRS and re-forestation through effective social mobilisation for disaster prevention and poverty reduction.

NADMO functions under a National secretariat, ten (10) Regional secretariats, two hundred and forty-three (243) Metropolitan, Municipal and District secretariat and over nine hundred (900) Zonal offices throughout the country.

#### **4.3.17 Ghana Meteorological Agency Act, 2004, Act 682**

The object of the Agency is to provide meteorological services in the country and ensure the operation and maintenance of international standards and practices in meteorology in the country. The Agency is to

- (a) advise the Government on meteorology generally;
- (b) issue weather forecasts for the safe operation of air-craft, ocean going vessels, oil rigs and other socio-economic activities;
- (c) provide meteorological information, advice, and warnings for the benefit of agriculture, civil and military aviation, surface and marine transport, operational hydrology and management of energy and water resources to mitigate the effects of natural disasters such as floods, storms and droughts on socio-economic development and projects.

#### **4.3.18 Ministry of Justice and Attorney General**

The objectives of the Ministry are

- To formulate Policies, Monitor and Evaluate for the fair and efficient operation of the legal systems.
- To revise, reform and replace laws for the realisation of the policy objectives of Government with regards to National and Social growth.
- Broaden the scope of legal aid services.
- To develop and provide the requisite legal and paralegal manpower.
- To accelerate the disposal of criminal prosecution.
- To improve crime prevention and public accountability in the utilisation and management of the nation's financial and resources.
- To heighten public awareness of the nation's law and statutes and publish the official law reports.

The Ministry will be involved in drafting of bills and revision of laws for the realization of REDD+ policy objectives and also play a key role in dispute resolution and passing judgement on forest offences.

#### **4.3.19 Local Government Authorities**

The Regional Coordinating Council (RCC) and the District Assembly (DA) are responsible for the overall development of the region and district respectively and their functions include: to prepare and submit development plans and budgets to superior institutions for approval and implementation. These institutions were set up by an Act of Parliament, to serve as the planning authority for the region and district respectively.

The current local government structure or the district assembly system is established by two main Acts, namely Act 462 and Act 480. Both Act 462 and Act 480 designate the District/Municipal/Metropolitan Assembly as the planning authority, charged with the overall development of the district. Both Acts provide that local people (communities) must participate in the formulation of the District Development Plan.

A key feature of this Assembly System is the involvement of communities or zones or whole villages who elect their representatives (Assemblymen) to the Assembly. The structure of the Assembly comprises Unit Committees which are usually formed at the community levels, and the Urban/Town/Area Councils.

With regard to environmental management at the district level, the District Environmental Management Committees (DEMC) has been set up by law (Act 462) to among other things:

- promote and provide guidelines for the establishment of community level environmental committees to put into effect the environmental programmes of the Assembly in the community;
- Plan and recommend to the DA, strategies and activities for the improvement and protection of the environment with emphasis on fragile and sensitive areas, river courses etc.

#### **4.3.20 Traditional Authorities/ National House of Chiefs**

Traditional authorities encompass chiefs or traditional rulers, and traditional councils. In Ghana, the traditional authority system comprises:

- Chiefs;
- Queen Mothers;
- Linguists;
- Family/lineage/clan heads;
- Head of 'asafo' companies; and
- Priests and priestesses.

In pre-colonial times, traditional authorities constituted the axis for the exercise of executive, legislative and judicial powers. Traditional authorities are now largely the custodians of the traditions and customs of their subjects. Chiefs (or other traditional rulers) have important role as custodians of communal land and exercise traditional authority over people living within their areas.

Forestry has had diverse impacts on traditional authority systems, especially as they relate to authority over land. The regulation, allocation and management of land have been a responsibility and right of traditional authority and structures. Chiefs are recipients of part of royalties from the forestry sector and land rent payable in private tree plantation operations. Traditional councils, who assist the chiefs, also receive a share of royalties. Traditional authorities are key players in decision-making. Traditional

authorities sit on important boards such as the Forestry Commission board and the National REDD Working Group.

The 1992 constitution under Article 270(1) and the Chieftaincy Act 2008 guarantees the institution of chieftaincy together with its traditional councils as established by customary law and usage. The Constitution also makes provision for an elaborate system of House of Chiefs. This includes several traditional and divisional councils, each of which elects members to one of ten Regional Houses of Chiefs (RHCs), and then five members from each RHCs to the National House of Chiefs.

#### **4.3.21 The Private Sector**

##### **Timber Industry**

International and national private investors and entrepreneurs form an essential pillar of the development of the Ghanaian economy. Two major groups in the forestry sector include the Ghana Timber Association (GTA), which is made up of loggers and the Ghana Timber Millers Organisation (GTMO), which comprises of the milling and export companies. These bodies are managed on daily basis by an elected executive committee headed by an elected President. Other players in the industry include the Furniture and Wood Workers Association of Ghana (FAWAG) comprising of a wide range of members from small wood workers to large furniture companies. There are also the retailers of lumber in the domestic market forming the Domestic Lumber Traders Association (DOLTA).

Generally, investors and entrepreneurs focus on the breaking even of their investments and the generation of profits in relation to financial risks, rather than on sustainability. Mechanisms to promote responsible entrepreneurship such as timber processing and standard setting for the timber industry, which urge companies to minimise wastage and also comply with environmental norms need to be developed for the timber industry.

##### **Cocoa Industry**

The major groups of interest include:

- The Ghana Cocoa Coffee and Shea-nut Farmers Association (COCOSHE)
- Cocoa Abrabopa Association (CAA)
- Kuapa Kokoo
- The Ghana Cocoa Platform
- Private License Buying Companies

##### The Ghana Cocoa Coffee and Shea-nut Farmers Association

The Ghana Cocoa, coffee and Shea-nut farmers association is the parent body for cocoa, coffee and shea-nut farmers in the country. It was officially founded in 1980 during the reign of Dr Hilla Limann to campaign for better price of the crops.

##### Cocoa Abrabopa Association

The not-for-profit Cocoa Abrabopa Association (CAA) was officially established in 2008 after being piloted at Bunso Nkwanta in the Western Region of Ghana two years earlier. It is an association of cocoa farmers seeking a better life by using the CAA input and guidance package. The concept started as a farmers program with an input package recommended by the Cocoa Research Institute of Ghana. The associations' headquarters is located at Dunkwa-on-Offin in the Central Region of Ghana, the heart of the cocoa growing regions. Cocoa Abrabopa Association works closely with the Ghana Cocoa Board (COCOBOD).



### Kuapa Kokoo

When internal marketing of cocoa was liberalized in Ghana, a group of farmers led by Nana Frimpong Abrebrese established Kuapa Kokoo as a farmer's cooperative in 1993 with assistance from Twin Limited UK. Two years later, the union received its first Fairtrade certification. The cooperative works at improving the social, economic and political wellbeing of its members. Kuapa Kookoo simply means Good Cocoa Farming. Kuapa Kokoo seeks to develop itself into a formidable farmer-based organisation capable of mobilising quality cocoa products, improving the livelihood of members and satisfying customers. The head-office is located in Kumasi, Ashanti Region.

### The Ghana Cocoa Platform

The Ghana Cocoa Platform is an avenue created by the Ghana Cocoa Board (COCOBOD) with other supporting stakeholders to provide convening and coordination on technical issues beyond the topic of extension and into other thematic areas of the cocoa sector that would benefit from a public private partnership approach to cocoa development. The goal of the Platform is to boost sustainable production in Ghana's cocoa sector through enhanced partnership and cooperation among stakeholders. The platform, through plenary sessions provides opportunities for a wider inclusion of sector stakeholders to discuss a mirage of issues that will have a positive impact on the Ghanaian cocoa sector. The Platform is to be led by COCOBOD, with UNDP providing technical advice, facilitation and organization support to set up and run the platform.

### Private License Buying Companies (LBCs)

COCOBOD license private companies to purchase cocoa harvest from individual farmers at sanctioned price and conditions. The LBCs e.g. Olam, Armajaro and others, however, provide numerous services to the farmers in their license area, including extension services, inputs, and guidance on application of agrochemicals. The promotion of Integrated Pest Management and other sustainable practices by the LBCs is an important element of the overall national effort to advance ecologically friendly cocoa production in Ghana.

#### **4.3.22 NGOs/Civil society**

There are quite a number of NGOs/Civil society groups both national and international in Ghana, and can be found operating in all the ten regions of the country in one way or the other. Their activities cut across exploitation of natural resources (forestry, mining), agriculture especially the cocoa subsector, protection of water bodies to climate change issues. These NGOs or civil society groups have advocated for good governance in the natural resource sector, transparency, respect for human rights, fairness, accountability etc.

Within the NGO group alone, there are over seventy (70) registered NGOs (TBI, 2008). Some relevant international NGOs operating within the forestry sector and or on climate change related issues include IUCN, TBI, SNV, Solidaridad, Conservation Alliance, Oxfam, and Nature Conservation Research Center (NCRC). At the community level, one can identify such civil society groups as local forest users, traditional authorities (chiefs/landowners), women's groups, hunters and minor forest products' collectors such as herbalists whose livelihoods depend on forests.

Several civil society coalitions and platforms are also emerging. A key example is the Forest Watch Ghana, which claims a representation of civil society interests in ensuring good governance in the forestry sector.



For example, under the FLEGT VPA process, the Forest Watch Ghana represents the civil society stakeholders in the VPA Steering committee and is consulted regularly on developments with respect to implementation of the VPA (Marfo, E., E. Danso and S.K. Nketiah. 2013).

Other groups that can be classified under CSOs include research and academic institutions such as KNUST, FORIG, UENR; professional bodies such Ghana Institute of Foresters; Religious associations, trade unions among others.

#### 4.3.23 Development Partners

Development partners play a key role in the general development of the country by providing funding required to support the implementation of policies/plans/programmes/projects across almost all the sectors including forestry, which has been greatly influenced by donor support. These Bilateral and multilateral donors –e.g. World Bank, AfDB etc not only provide funding but also ensure that the implementation of the interventions satisfy their prescribed environmental and social safeguards or requirements or standards.

#### 4.4 World Bank Safeguards Policies

The Bank's ten safeguard policies are designed to help ensure that programs proposed for financing are environmentally and socially sustainable, and thus improve decision-making. The Bank's Operational Policies (OP) are meant to ensure that the Bank does not finance projects that will have irreversible major adverse impacts or cause significant harm to the people. The Safeguard Policies are lumped into Environment, Rural Development, Social Development and International Law. These operational policies include:

- OP/BP 4.01: Environmental Assessment
- OP/BP 4.04: Natural Habitats
- OP 4.09: Pest Management
- OP/BP 4.12: Involuntary Resettlement
- OD 4.20: Indigenous Peoples
- OPN 11.03: Cultural Property
- OP 4.36: Forests
- OP/BP 4.37: Safety of Dams
- OP/BP 7.50: Projects on international Waters
- OP/BP 7.50: Projects in Disputed Areas

The potential for these safeguard policies to be triggered under the country's REDD+ mechanism is presented below in **Table 4.2**.

**Table 4.2: World Bank Safeguard Policies**

No	World Bank Safeguard Policy	Summary of core requirements	Potential for Trigger under REDD+ mechanism
1	OP 4.01 <i>Environmental Assessment</i>	Screen early for potential impacts and select appropriate instrument to assess, minimise and mitigate potentially adverse impacts. In World Bank operations, the purpose of Environmental Assessment is to improve decision making, to ensure	Triggered

		that project options under consideration are sound and sustainable, and that potentially affected people have been properly consulted.	
2	<i>OP 4.04: Natural Habitats</i>	To promote environmentally sustainable development by supporting the protection, conservation, maintenance, and rehabilitation of natural habitats and their functions. Use a precautionary approach to natural resources management to ensure opportunities for environmentally sustainable development. Determine if project benefits substantially outweigh potential environmental costs.	Triggered
3	<i>OP 4.36: Forest</i>	The objective is to realize the potential of forests to reduce poverty in a sustainable manner, integrate forests effectively into sustainable economic development, and protect the vital local and global environmental services and values of forests. Ensure that forest restoration projects maintain or enhance biodiversity and ecosystem functionality and that all plantation projects are environmentally appropriate, socially beneficial and economically viable.	Triggered
4	<i>OP 4.09: Pest Management</i>	Support integrated approaches to pest management. Identify pesticides that may be financed under the project and develop appropriate pest management plan to address risks. If pesticides have to be used in crop protection or in the fight against vector-borne disease, the Bank-funded project should include a Pest Management Plan (PMP), prepared by the borrower, either as a stand-alone document or as part of an Environmental Assessment.	Triggered (under Strategic option M: of improving productivity of farmlands is adopted)
5	<i>OP 4.11: Physical Cultural Resources</i>	Investigate and inventorise cultural resources potentially affected. Include mitigation measures when there are adverse impacts on physical cultural resources or avoid if possible.	Triggered (but can be handled under OP 4.01)
6	<i>OP 4.12: Involuntary Resettlement</i>	Assist displaced persons in their effort to improve or at least restore their standards of living. Avoid resettlement where feasible or minimise. Displaced persons should share in project profits. The policy aims to avoid involuntary resettlement to the extent feasible, or to minimize and mitigate its adverse social and economic impacts. The policy prescribes compensation and other resettlement measures to achieve its objectives and requires that borrowers prepare adequate resettlement planning instruments prior to Bank appraisal of proposed projects.	Triggered (under Strategic Options -F: Mitigate effects of agricultural expansion (particularly cocoa in the HFZ); -D: Address unsustainable timber harvesting by supporting sustainable supply of timber to meet export and domestic / regional timber demand -H. Improve sustainability of fuel wood use
7	<i>OP 4.10: Indigenous Peoples</i>	Screen to determine presence of indigenous peoples in project area. Policy triggered whether potential impacts are positive or negative. Design mitigation measures and	Not triggered

		benefits that reflect indigenous peoples' cultural preferences.	
8	<i>OP 4.37: Safety of Dams</i>	Requires that experienced and competent professionals design and supervise construction, and that the borrower adopts and implements dam safety measures through the project cycle. The policy distinguishes between small and large dams by defining small dams as those normally less than 15 meters in height. Large dams are 15 meters or more in height. .	Not triggered
9	<i>OP 7.50: Projects on International Waterways</i>	Ascertain whether riparian agreements are in place, and ensure that riparian states are informed of and do not object to project interventions.	Not triggered
10	<i>OP 7.60: Projects in Disputed Areas</i>	Ensure that claimants to disputed areas have no objection to proposed project.	Not triggered

In addition, the World Bank Policy on Access to Information, launched on July 1, 2010 has been adopted by the World Bank, and this is potentially triggered under the REDD+. The Bank is also piloting the Use of Borrower Systems – OP 4.00, (2005) which is aimed at improving overall understanding of implementation issues related to greater use of country systems to avoid, mitigate, or minimize adverse environmental and social impacts of projects supported by the Bank.

#### 4.5 IFC Performance Standards

In 2006, IFC started to apply Performance Standards on social and environmental sustainability to all its investments. About 75 banks following the Equator Principles are applying standards based on IFC's Performance Standards. IFC has recently updated these Standards in a multi-year, extensive and global stakeholder process. This has resulted in a state of the art safeguard policy, entering into force in January 2012. Clients are obliged to comply with these performance standards, or if they lack full compliance to commit to a stepwise approach toward compliance.

IFC's Performance Standards are:

- a. Assessment and management of environmental and social risks and impacts;
- b. Labour and working conditions;
- c. Resource efficiency and pollution prevention;
- d. Community health safety and security;
- e. Land acquisition and involuntary resettlement;
- f. Biodiversity conservation and sustainable management of living natural resources;
- g. Indigenous people; and
- h. Cultural heritage.

The IFC PS will be of relevant to REDD+ when there is private sector participation in reforestation/afforestation programmes (e.g. in degraded forest reserves) and support for cocoa cultivation within areas considered for the emission reduction programmes. If the sponsorship of the Ghanaian REDD+ Emission Reductions Program currently under development for the FCPF takes the form of a private-public partnership, then the operation could be subject to the application of the WB safeguard policies/IFC performance standards in parallel. *The IFC performance standards are generally consistent with the World Bank safeguard policies.*

The potential for these PS to be triggered under the country's REDD+ mechanism is presented below in **Table 4.3**.

**Table 4.3: Summary of IFC Performance Standard**

No	IFC Performance Standards	Summary of core requirements	Potential for Trigger under REDD+ Mechanism
1	<i>Assessment and Management of Environmental and Social Risks and Impacts</i>	Identify and evaluate environmental and social risks and impacts of the project and adopt measures anticipate, avoid and when avoidance is not possible, minimise and or compensate Project Affected People/Communities and Environmental Area of Influence. The achievement of the above, Clients should established an effective ESMS, which ensures stakeholders/community participation and grievance redress mechanisms.	Triggered as project will impact on both biophysical environment, and socio-cultural and livelihood of some community members.
2	<i>Labor and Working Conditions of workers</i>	Management of projects should ensure workers safety promote the fair treatment, non-discriminatory and equal opportunity of workers and establish, maintain and improve the worker-management relationship, and comply with national employment and labour laws of host country.	Triggered as REDD+ activities will involve engagement of considerable labour force. Worker's safety and congeniality of workers condition will be very cardinal in the successful project execution and acceptability
3	<i>Resource Efficiency and Pollution Prevention</i>	Avoid or minimise adverse impacts on human health and the environment through avoidance or minimisation of pollution including release of greenhouse gases from project and promote sustainable use of resources such as energy and water. Clients are also expected to ensure the use of efficient pollution abatement machinery to reduce pollution.	Triggered due to the anticipated use of large quantities of agro-chemicals to improve cocoa production and minimize cocoa farm expansion in the high forest zones
4	<i>Community Health, Safety and Security</i>	To evaluate the risks and impacts to the health and safety of the Affected Communities during the project lifecycle and establish preventive and control measures consistent with Best International Practices and commensurate with their nature and magnitude of impacts.	Triggered as anticipated impacts and risk from REDD+ activities will affect forest fringe communities, cocoa communities.
5	<i>Land Acquisition and Involuntary Resettlement</i>	As much as possible project siting and activities should not displace people. However, where avoidance is not possible, displacement should be minimised by alternative project design considerations. No force eviction should be undertaken by client. Land acquisition should be done in a manner as to minimise adverse social and economic impacts through the provision of	Triggered as REDD+ activities in off-reserve areas may require the use of stool lands, communal lands or individual lands.

		compensation packages and to ensure a humane resettlement procedure, disclosure of information, consultation and participatory of PAPs. It should be the client's duty to ensure the physical and economic wellbeing of displaced people are not worst of than their pre displaced lives.	
6	<i>Biodiversity Conservation and Sustainable Management of Living Natural Resources</i>	All clients should identify both direct and indirect project related impacts that could potentially threaten biodiversity and ecosystem services. The following indicators should be used as a guide: habitat loss, degradation and fragmentation, invasive alien species, overexploitation, hydrological changes, nutrient loading, and pollution.	Triggered as both aquatic and terrestrial ecosystems occur within the high forest zones earmarked for the emission reduction program
7	<i>Indigenous People</i>	Indigenous People are defined as a social group with identities that are distinct from mainstream groups in national societies, are often among the most marginalized and vulnerable segments of the population.	Not triggered as there are no recognizable indigenous people in the country
8	<i>Preservation of Cultural Heritage</i>	Client must protect cultural heritage from the adverse impacts of project activities and support its preservation. Clients should also promote the equitable sharing of benefits from the use of cultural heritage.	Triggered. Cultural heritage sites shall be identified in all areas where REDD+ activities are being implemented.

#### 4.6 UNFCCC Safeguards for REDD+/Cancun Safeguards

The safeguards included in the UNFCCC guidance related to REDD+, commonly referred to as Cancun Safeguards are provided in Paragraph 2 in the Appendix I of Decision 1/CP16 include the following:

- a) That actions complement or are consistent with the objectives of national forest programs and relevant international conventions and agreements;
- b) Transparent and effective national forest governance structures, taking into account national legislation and sovereignty;
- c) Respect for the knowledge and rights of indigenous peoples and members of local communities, by taking into account relevant international obligations, national circumstances and laws, and noting that the United Nations General Assembly has adopted the United Nations Declaration on the Rights of Indigenous Peoples;
- d) The full and effective participation of relevant stakeholders, in particular indigenous peoples and local communities, in the actions referred to in paragraphs 70 and 72 of this decision;
- e) That actions are consistent with the conservation of natural forests and biological diversity, ensuring that the actions referred to in paragraph 70 of this decision are not used for the conversion of natural forests, but are instead used to incentivize the protection and conservation of natural forests and their ecosystem services, and to enhance other social and environmental benefits;
- f) Actions to address the risks of reversals; and
- g) Actions to reduce displacement of emissions.

Decision 1/ CP 16 also requests, developing country Parties aiming to undertake REDD+ activities, in the context of the provision of adequate and predictable support, to develop a system for providing information on how the safeguards referred to in appendix I to this decision are being addressed and respected throughout the implementation of these activities.

The development of these safeguards information systems should take into account national circumstances and the respective capabilities of developing countries, whereas acknowledging national sovereignty, the relevant international obligations and agreements, and respecting gender considerations.

Decision 12 / CP.17 states that the national safeguards information systems should:

- (a) Be consistent with the guidance identified in decision 1/CP.16, Appendix I, paragraph 1;
- (b) Provide transparent and consistent information that is accessible by all relevant stakeholders and updated on a regular basis;
- (c) Be transparent and flexible to allow for improvements over time;
- (d) Provide information on how all of the safeguards referred to in Appendix I to decision 1/CP.16 are being addressed and respected;
- (e) Be country-driven and implemented at the national level; and
- (f) Build upon existing systems, as appropriate.

The communication from developing country Parties to the UNFCCC on how the safeguards of Cancun are addressed and respected throughout the implementation of REDD+ will take the form of a summary of information, which will be part of the National Communication or may be submitted voluntarily by the country via the REDD+ platform on the UNFCCC website. This submission is a requirement for obtaining results-based payments, according to decision 9 / CP.19, paragraph 4.

#### 4.7 Cancun Safeguards and the World Bank Safeguard Policies

The World Bank safeguards policies, procedures and practices are generally consistent with the Cancun safeguards for REDD+ as shown below. The ER Program implementation is using applicable World Bank safeguard instruments as well as existing national systems (policies, laws and regulations) to ensure compliance with the Bank Safeguard Policies and the Cancun Safeguards. The table below also shows key environmental/social and governance issues to arise from the ER Program implementation and how these issues relate to the Cancun safeguards and the World Bank Safeguard policies.

**Table 4.4: UNFCCC Safeguards for REDD+ and World Bank Safeguard Policies**

Cancun Safeguards	Relevant World Bank Safeguard Policies and Procedures
(a) That actions complement or are consistent with the objectives of national forest programmes and relevant international conventions and agreements	<p>OP 4.01 on Environmental Assessment (EA) takes into account the country's overall policy framework, national legislation, and institutional capabilities related to the environment and social aspects; and obligations of the country, pertaining to project activities, under relevant international environmental treaties and agreements. The Bank does not finance project activities that would contravene such country obligations, as identified during the EA.</p> <p>OP 4.36 requires projects to abide by international environmental agreements and forest certification systems to adhere to all relevant laws.</p>

(b) Transparent and effective national forest governance structures, taking into account national legislation and sovereignty	<p>The Bank's Operational Policy on forests (OP 4.36) requires forest certification systems to implement transparent decision-making procedures. The Bank also has a Policy on Access to Information, detailing the type of information that is and is not available to the public.</p> <p>(Relevant sections in World Bank Safeguard Policies include:  Access to Information policy, in particular para. 1  OP 4.01 on Environmental Assessment, in particular paras. 3 and 13  OP 4.36 on Forests, in particular para. 14  BP 4.04 on Natural Habitats, in particular para. 5  BP 4.10 on Indigenous Peoples, in particular para. 10  BP 4.12 on Involuntary Resettlement, in particular para. 2).</p>
(c) Respect for the knowledge and rights of indigenous peoples and members of local communities, by taking into account relevant international obligations, national circumstances and laws, and noting that the United Nations General Assembly has adopted the United Nations Declaration on the Rights of Indigenous Peoples	<p>OP 4.10 refers to the right of indigenous communities to free, prior, and informed consultation, though it does not refer to consent.</p> <p>(Relevant sections include:  OP 4.10 on Indigenous Peoples, in particular para. 1; para. 16; paras. 19 to 21  OP 4.36 on Forests, in particular paras. 10 and 14  BP 4.36 on Forests, in particular para. 4)</p>
(d) The full and effective participation of relevant stakeholders, in particular indigenous peoples and local communities, in the actions referred to in paragraphs 70 and 72 of this decision;	<p>Where indigenous Peoples are affected, free, prior, and informed consultation must be carried out according to OP 4.10. The policy states consultations must be performed in indigenous language at a culturally appropriate venue with adequate time for stakeholders to build consensus.</p> <p>(Relevant sections include:  OP 4.01 on Environmental Assessment, in particular paras. 14 and 15  OP 4.10 on Indigenous Peoples, in particular para. 1  OP 4.04 on Natural Habitats, in particular para. 10  OP 4.12 on Involuntary Resettlement, in particular para. 7 OP 4.36 on Forests, in particular paras. 11 and 12)</p>
(e) Actions are consistent with the conservation of natural forests and biological diversity, ensuring that actions referred to in paragraph 70 of this decision are not used for the conversion of natural forests, but are instead used to incentivize the protection and conservation of natural forests and their ecosystem services, and to enhance other social and environmental benefits <sup>4</sup>	<p>OP 4.01 on Environmental Assessment (paras 2-3 and Annex A, paras 7 and 9),  OP 4.04 on Natural Habitats (paras 1, 4, 5, and 9 and Annex A, para 1) and  OP 4.36 on Forests (paras 1, 5 and 7) address the preservation of areas with high biodiversity value and promote the protection of environmental services.</p> <p>OP 4.01 on Environmental Assessment is used to identify, avoid, and mitigate potential negative environmental impacts. This policy is considered the umbrella policy on environmental safeguards. OP 4.04 on Natural Habitats and OP 4.36 on Forests also outline mitigation of negative impacts including forest displacement, conversion, and degradation. It states the World Bank will not support projects that result in the significant degradation or conversion of critical natural habitats.</p>
(f) Actions to address the risks of reversals	<p>The Operating Procedures do not explicitly outline reversals; however this could be covered in the</p> <p>OP 4.01 on Environmental Assessment, in particular paras. 1 and 2  OP 4.36 on Forests, in particular para. 14</p>



(g) Actions to reduce displacement of emissions	The Operating Procedures do not explicitly outline displacement; however this could be covered in the OP 4.01 on Environmental Assessment, in particular para. 2; para. 3 OP 4.04 on Natural Habitats, in particular para. 4 and Annex A, para. 1(c)
(UNFCCC Decision 12/CP.17)	OP 4.12, OP 4.20, OP 4.10, OP 4.04, OP 4.01, and OP 4.36 all contain references to the development of monitoring and/or reporting systems depending on the context and scope of the project being implemented.

## 4.8 Environmental Assessment in Ghana

### 4.8.1 EIA Procedures and Activities

The EPA Act 1994 (Act 490) provides for the establishment of an Environmental Protection Agency with functions among others, to 'advise the minister on the formulation of policies on all aspects of the environment and in particular make recommendations for the protection of the environment'. The other parts of the Act include Enforcement and Control which gives powers to the Agency to request for an EIA; Part three establishes an Environment Fund and finally Part four describes the administration and general provisions of the Act.

Part 1 of the Environmental Assessment Regulations, 1999 LI 1652 on Environmental Permit describes undertakings requiring registration and issuance of environmental permit, as:

- (1). No person shall commence any of the undertakings specified in Schedule 1 to these Regulations or any undertaking to which a matter in the Schedule relates, unless prior to the commencement, the undertaking has been registered by the Agency and an environmental permit has been issued by the Agency in respect of the undertaking.
- (2). No person shall commence activities in respect of any undertaking which in the opinion of the Agency has or is likely to have adverse effect on the environment or public health unless, prior to the commencement, the undertaking has been registered by the Agency in respect of the undertaking.'

The procedures establish an EIA process to among others, provide enough relevant information to enable the EPA to set an appropriate level of assessment of any proposed undertaking, investment or programme for the necessary review and to facilitate the decision making process for the EIA approval. The procedures comprise activities such as project Registration, Screening, Scoping, EIS preparation, and Public hearing. The procedures are statutorily recognised under the EPA Act 1994 (Act 490).

Upon submission of the completed Forms, the EPA will screen the project to determine what level of environmental assessment is required. There are three main levels of assessment and these are:

- ◆ No reporting or permitting required;
- ◆ Preliminary environmental report required; and
- ◆ Full environmental impact assessment report required.

In the simplest case, that is where impacts are minor and negligible, no environmental reporting is required after registration of the project with the EPA. The second level of assessment is where the impacts are considered minimal, and the EPA may then require a Preliminary Environmental Report (PER) to be produced.



With the third level where detailed studies are needed to appreciate impacts, a full scale EIA is required. The detailed EIA studies in this case is preceded with the preparation of a Scoping report to the EPA outlining the terms of reference for the EIA study.

The EPA has a list of development projects for which full EIAs are mandatory. Agricultural projects of 40ha and above are identified with the list. In all cases, the EPA grants the environmental permit to the proponent after payment of the appropriate processing and permit fees. The EPA will notify the proponent on the amount to be paid as processing and or permit fees.

## 5.0 GHANA BASELINE CONDITION

This chapter presents the country baseline information and places emphasis on the subnational high forest zone/cocoa forest mosaic landscape. According to Ghana's National REDD+ Strategy, Ghana will implement REDD+ at a national scale, but that it will implement concerted actions and activities at sub-national, landscape scales that are defined by ecological boundaries (jurisdictions) that align with major commodities and drivers of deforestation and degradation. In April 2014, Ghana's Emission Reductions Programme for the Cocoa Forest Mosaic Landscape was formally accepted into the World Bank's Carbon Fund pipeline.

### 5.1 Bio-physical Environment

#### 5.1.1 Geopolitical Setting

Ghana has a total border of 2,093 km, including 548 km with Burkina Faso to the north, 688 km with Côte d'Ivoire to the west, and 877 km with Togo to the east. It has a coastline on the Gulf of Guinea, part of the Atlantic Ocean, measuring 539 km. It has an area of 239,540 sq km. Ghana has ten (10no.) administrative regions and 216 administrative districts.

The Cocoa Forest Mosaic Landscape/High Forest Zone (HFZ) is within five administrative regions including Ashanti, Brong Ahafo, Central, Eastern, and Western Regions. **Figure 5.1** and **Figure 5.2** show the regional and district map of the HFZ. The estimated area for the HFZ/Cocoa Forest Mosaic Landscape is about 5.9 million hectares.

#### 5.1.2 Climatic Conditions

The climate of Ghana is influenced by the movement of two air masses; Northeast Trade Winds and the Southwest Monsoons. These air masses determine the rainfall pattern over the region. The northeast trade winds are dry, cool and dust-laden and are known as the harmattan and usually affect Ghana from November to February. The southwest monsoon winds are moisture laden winds which tend to bring rains between March-July/September-October for the southern sector (i.e. from the coast to Brong Ahafo) and May-September for the northern sector (i.e. Upper East/West and Northern Regions). The mean annual rainfall of the Cocoa-Forest Mosaic landscape is shown in **Figure 5.3**. Average rainfall over the country is about 1,260 mm/ year.

#### Wet/Moist Evergreen Climatic Zone

The moist evergreen climatic zone is also the High Rain Forest zone and is found in the south-western part of the country. The annual rainfall of this zone is between 1,700 and 2,200 mm and there are two rainy seasons. The soils are heavily leached and fertility is relatively low. The major crops grown are oil palm, rubber, coconut, rice, bananas, plantains and cocoyam. The Western Region largely falls within this climatic zone.

## Regional Map Of The Cocoa-Forest Mosaic Landscape (HFZ)

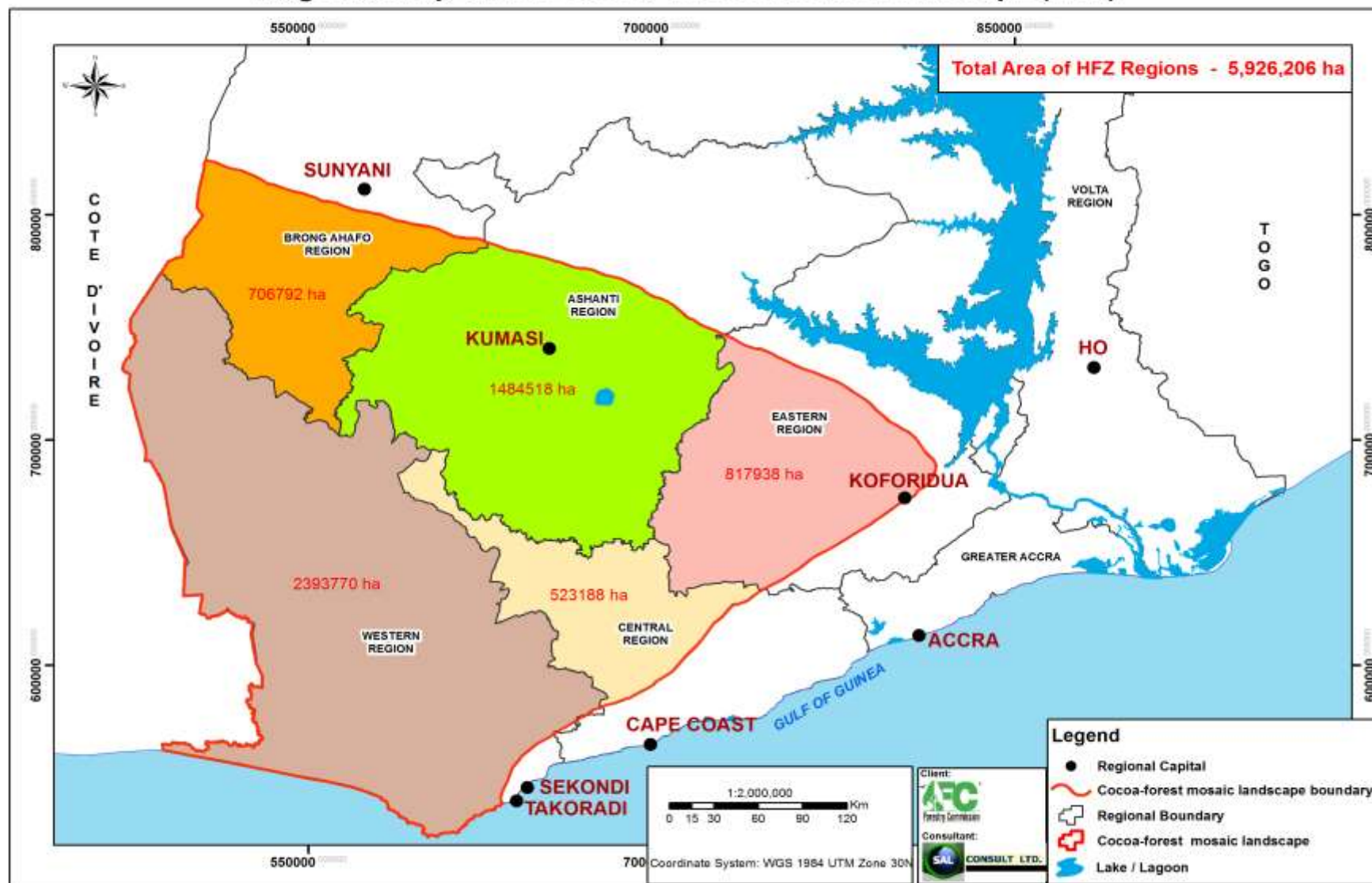


Figure 5.1: The Cocoa Forest Mosaic Landscape within the Administrative Regions

### District Map Of The Cocoa-Forest Mosaic Landscape (HFZ)

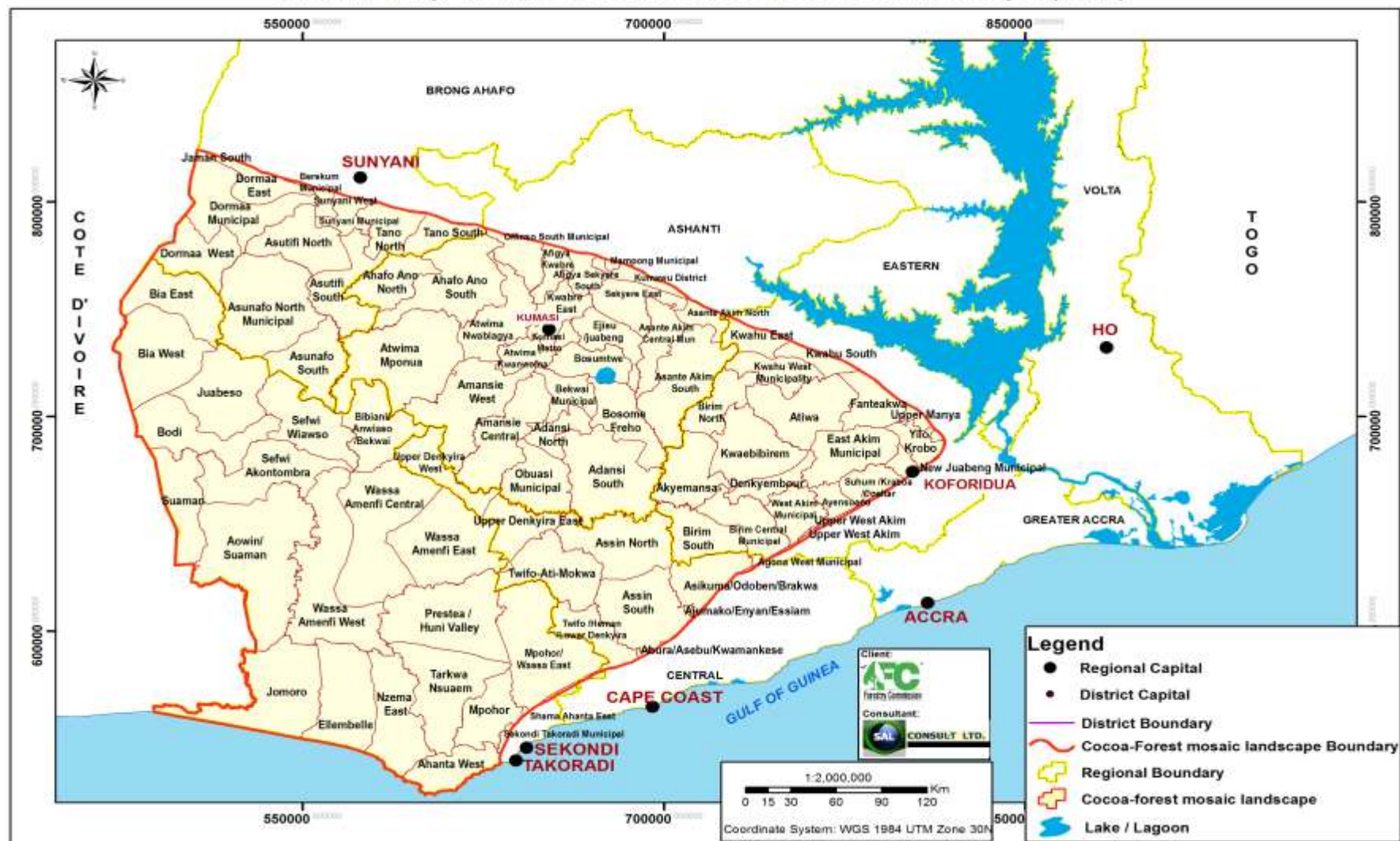


Figure 5.2: The Cocoa Forest Mosaic Landscape within the Administrative Districts



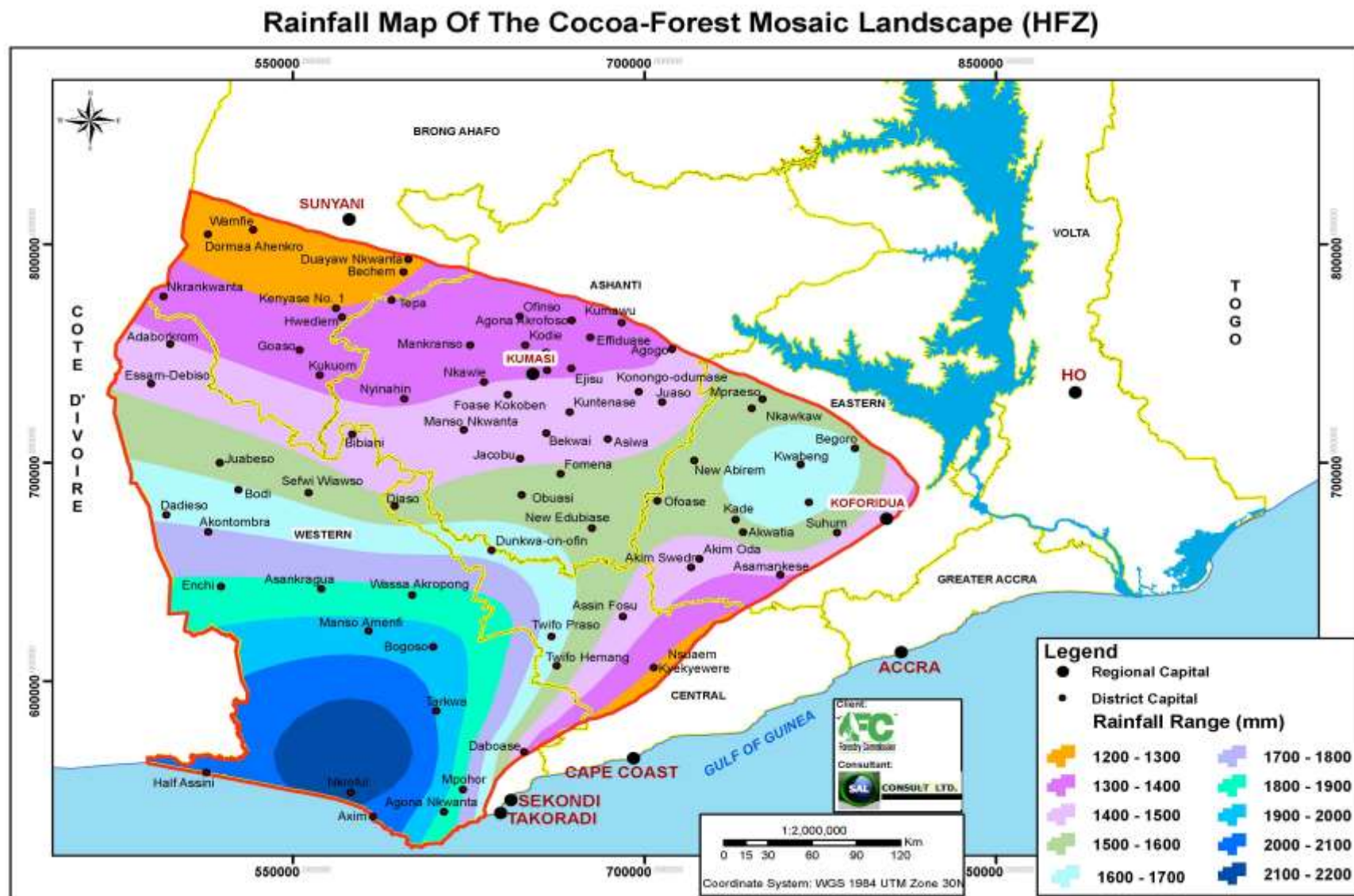


Figure 5.3: Mean Annual Rainfall Map of the Cocoa-Forest Mosaic Landscape

### The wet semi- equatorial climatic zone

The Ashanti and Eastern regions and part of the Volta, Central and Brong Ahafo regions fall within this climatic zone and is characterized by two rainfall maxima. The mean annual rainfall lies between 1200mm and 2000mm. The first rainy season is from May to June with the heaviest rains in June while the second season starts in September and ends in October. The highest mean monthly temperature of about 30°C occurs between March and April, and the lowest of about 26°C in August. The average monthly relative humidity is highest (75%- 80%) during the two rainy seasons and lowest (70%- 80%) during the rest of the year.

### The Dry equatorial zone

The southern parts of the Volta and Central and Gt. Accra Regions are within this climatic region, which also has two rainfall maxima but the dry seasons are more marked and the mean annual rainfall is considerably less, ranging from 700mm to 900mm. This region is the driest in Ghana. The temperatures are similar to the wet semi- equatorial reported above. Relative humidity is highest in the rainy season, but the highest average monthly relative humidity in this climatic zone varies within a relatively limited range of 60% at the lowest to a maximum of 75%.

### The tropical continental or savannah zone

The tropical continental zone or savannah zone has a single rainy season from May to October followed by a prolonged dry season. The mean annual rainfall is about 1000mm to 1150mm. The mean monthly temperatures vary from about 36°C in March to about 27°C in August. Relative humidity is high during the rainy season (70% to 90%) but may fall to as low as 20% during the dry season.

## **5.1.3 Water Resources**

### **5.1.3.1 Surface Water Systems**

There are three main surface water systems draining the country comprising the Volta river system (70% of the land area of Ghana)-comprises of Black/White Volta, Oti river, Afram, river, Volta Lake/Upper Volta and Lower Volta; Southwestern river system (22% of the land area of Ghana)-comprises of Bia, Tano, Ankobra and Pra (also made up of Birim and Offin rivers) river basins; and coastal river systems (8% of the land area of Ghana)-comprises of Densu, Ayensu, Ochi-Amisa, Ochi-Nakwa, Kakum and Odaw river basins. The areas covered by the respective river basins in the country are described in the **Table 5.1**. The administration regions and districts within the respective river basins are listed in **Table 5.2**.

The HFZ falls within the southwestern river and part of the coastal river systems. The Pra, Tano, Ankobra and Bia river basins are the major basins dominating the landscape and respectively cover 39%, 22%, 14% and 10.4% of the HFZ. The river basin map of the HFZ is shown in **Figure 5.4**.

### **5.1.3.2 Major Surface Water Usage**

Generally, the enormous natural resources within the river basins are currently being exploited for national development and sometimes these appear to be taking place beyond tolerable limits. Population levels and pressure are rising and these are exerting considerable demands on water resources. The major consumptive water resource uses in the country are for irrigation and domestic water supply. Hydropower generations on the Volta (e.g. upstream at Bui, midstream at Akosombo and Kpong) have had a major impact on the socio-economic development of the country.

There are plans to develop minihydro power on the South western rivers according to the national energy strategy plan. There is an ongoing study since 2010 to develop the minihydro project on the Pra River at Hemang under the Ministry of Energy.

Most of the river basins are characterized by accelerating land degradation and there is ample evidence of localized pollution from urban, industrial including mining activities especially in the coastal and south western rivers. The Ankobra and the Pra Rivers have suffered from serious mining pollution.

**Table 5.1: Catchment area of main river basins**

	River basin	Area in Ghana (Km <sup>2</sup> )	Percent in Ghana (%)	Area outside Ghana (Km <sup>2</sup> )	Total area (Km <sup>2</sup> )
<b>1.0</b>	<b>Volta River System</b>	<b>176,751</b>	<b>43.1</b>	<b>233,054</b>	<b>409,805</b>
1.1	Black Volta	35,107	23.6	113,908	149,015
1.2	White Volta	45,804	43.7	58,945	104,749
1.3	Daka	9,174	100.0	-	9,174
1.4	Oti	16,213	22.3	56,565	72,778
1.5	Lower Volta	68,588	95.4	32,730	71,861
1.6	Tordzie Aka	1,865	83.7	363	2,228
<b>2.0</b>	<b>South western system</b>	<b>52,862</b>	<b>96.9</b>	<b>1,718</b>	<b>54,580</b>
2.1	Bia	6,431	92.3	534	6,965
2.2	Tano	14,877	92.7	1,184	16,061
2.3	Pra	23,188	100.0	-	23,188
2.4	Ankobra	8,366	100.0	-	8,366
<b>3.0</b>	<b>Minor Coastal system</b>	<b>4,274</b>	<b>100</b>	<b>0</b>	<b>4,274</b>
3.1	Densu	2,564	100.0	-	2,564
3.2	Ayensu	1,710	100.0	-	1,710

(Source: WRC (2010) National Baseline Studies and Institutional analyses towards the development of the national IWRM Plan)

**Table 5.2: Administrative regions and districts drained by major river basins**

River System	River basin	Administrative regions		Administrative districts
		Region	% of area drained	
Volta	White Volta	Northern	50	Sawla Tuna Kalba; West Goja; West Mamprusi; East Mamprusi; Bunkpuru Yunyo; Karaga; Gushegu; Yendi Municipal; Tamale Metropolitan; Tolon Kumbungu; Savelugu Nanton; Central Gonja
		Upper West	70	Lambussie Karn; Sissala West; Sissala East; Wa East; Wa Municipal; Nadowli; Jirapa; Wa West.
		Upper East	100	Kassena Nankana East; Kassena Nankana West; Bongo; Talensi Nabdam; Garu Tempene; Bawku West; Bawku Municipal; Bolgatanga Municipal
	Black Volta	Upper West	22	Sissala West; Lambussie Karn; Lawra; Jirapa; Nadowli; Wa Municipal; Wa West; Wa East
		Northern	48	Sawla Una Kalba; West Gonja; Bole; Krachi West
		Brong Ahafo	30	Tain; Jaman North; Jaman South; Berekum Municipal; Sunyani West; Sunyani Municipal; Wenchi; Techiman Municipal; Kintampo Municipal; Kintampo South; Pru

River System	River basin	Administrative regions		Administrative districts
		Region	% of area drained	
South western	Lower Volta	Volta	71	South Dayi; Ho Municipal; Adaklu Anyigbe; North Tongu; South Tongu
		Eastern	13	Asuogyamann; Lower Manya Krobo; Yilo Krobo; Akwapim North
		Greater Accra	16	Dangbe East, Dangbe West
	Bia	Brong Ahafo	44	Asunafo South; Asunafo North; Asutifi; Dormaa Municipal
		Western	56	Bia; Juabeso; Sefwi Wiawso; Aowin Suaman; Sefwi Akontonbra
	Tano	Brong Ahafo	35	Berekum Municipal; Dormaa East; Sunyani West; Sunyani Municipal; Tano North; Tano South; Techiman Municipal; Asunafo South
		Western	50	Bibiani Anhwiaso; Sefwi Wiawso; Juabeso; Sefwi Akintonbra; Ellembele; Aowin Suaman; Jomoro
		Ashanti	15	Offinso North; Ahafo Ano South; Ahafo ANo North; Atwima Mponua
	Pra	Ashanti	55	Ahafo Ano; Offinso Municipal; Afigya Kwabre; Sekyere South; Atwima Nwabiagya; Mampong Municipal; Asante North; Ejisu Juaben; Asante AKim North; Bosome Freho; Bosomtwe; Kwabre; Kumasi Metropolitan; Bekwai Municipal; Adansi North; Adansi South; Obuasi Municipal; Amansie Central; Amansie West; Atwima Mponua
		Central	15	Assin North Municipal; Assin South; Lower Denkyira; Mpohor Wassa East; Upper Denkyira East; Upper Denkyira West; Askuma Odoben Brakwa
		Eastern	23	Akim South; Birim Central Municipal; Akyemansa; Kwabibirem; Suhum Kraboa Coaltar; east Akim Municipal; Fanteakwa; Atiwa; Kwahu West Municipal; Birim North; Kwahu East; Kwabre South
		Western	7	Mpohor Wassa East; Shama; Tarkwa Nsuaem; Bibiani Anhwiaso Bekwai
				Atwima Mponua
	Ankobra	Ashanti	1	
		Western	92	Nzema East; Ellembele, Tarkwa/Nsuaem; Pretea Huni Valley; Mpohor Wassa East;; Wassa Amenfie East; Wassa Amenfie West; Jomoro; Bibiani Anhwiaso
		Central	7	Twifo Heman Lower Denkyira; Upper Denkyira West; Upper Denkyira East
Coastal	Densu	Eastern	71	East Akim; Kwaebibirem; New Juaben Municipal; Suhum Kraboa Coaltar; Akwapim North; Akwapim South; West Akim Municipal
		Greater Accra	23	Ga West; Ga South; Ga East; Accra Metropolitan
		Central	6	Awutu Senya
	Ayensu	Central	54	Agona East Municipal; Agona West; Awutu Senya;
		Eastern	46	Suhum Kroboa Coaltar; West Akim Municipal; Birim Central Municipal

(Source: WRC (2010) National Baseline Studies and Institutional analyses towards the development of the national IWRM Plan)





Figure 5.4: River Basin Map of the Cocoa Forest Mosaic Landscape

### 5.1.4 Surface Water Quality and Pollution

#### 5.1.4.1 Ghana Raw Water Quality Criteria and Guidelines

##### Background

In 2003, the Water Resources Commission in collaboration with the Water Research Institute (WRI) of the CSIR developed the Ghana Water Quality Index (WQI) for application to Ghanaian river systems. The WQI is a classification system that uses a computerized index based on selected water quality parameters. The adapted WQI used in assessing the state of the various basins in Ghana is based on the Solway River Purification Board (RPB) Weighted Water Quality Index developed by Bolton *et al* (1978).

This is the general water quality indices type in which various physical, chemical and microbiological variables are aggregated to produce an overall index of water quality. It is intended to reflect the overall and ongoing condition of the water. The 10 parameters used include:

- I. Dissolved Oxygen (DO);
- II. Biochemical Oxygen Demand (BOD);
- III. Ammonium Nitrogen;
- IV. Faecal Coliform;
- V. pH;
- VI. Nitrate as Nitrogen (NO<sub>3</sub>-N);
- VII. Phosphate as Phosphorus (PO<sub>4</sub>-P);
- VIII. Total Suspended Solids (TSS);
- IX. Conductivity; and
- X. Temperature.

The established WQI is to be used for a variety of purposes, including:

- Communicating water quality information to the public and decision makers;
- Applying it as a planning tool for water resources management;
- Identifying water quality problems for which special studies are needed; and
- Evaluating the performance of pollution control programmes.

The adapted index classifies:

- Water quality relative to its desirable or natural state, thus measuring the degree to which water quality is affected by human activity; and
- Suitability for various uses, including uses by humans, aquatic life and wildlife wherever such uses are naturally sustainable.

##### Classification of Water Quality

**Table 5.3** below shows the adapted and modified classification system that uses a class system and a scale of zero to 100 in various ranges for the corresponding classes.

**Table 5.3: Water Quality Classification of Surface Waters**

Class	WQI Range	Description
I	>80	Good-Unpolluted and /or recovering from pollution
II	50-80	Fairly good
III	25-50	Poor quality
IV	<25	Grossly polluted

Source: WRC Ghana Raw Water Quality Criteria and Guidelines, June 2003

The classifications are described as follows:

**Good**

Water unpolluted and /or is recovering from pollution; all uses are protected with only a minor degree of threat or impairment; no uses are ever interrupted and conditions rarely depart from natural or desirable levels.

**Fairly Good**

Most uses of the water are protected but a few are threatened or impaired; a single use may be temporarily interrupted and conditions sometimes depart from natural or desirable levels.

**Poor Quality**

Several uses of water are threatened or impaired; more than one use may be temporarily interrupted and conditions often depart from natural or desirable levels.

**Grossly Polluted**

Most uses of water are threatened or impaired; several uses may be temporarily interrupted and conditions usually depart from natural or desirable levels.

#### 5.1.4.2 General Quality of Major Rivers in Ghana

The WRC undertakes periodic monitoring of major rivers in Ghana. The objective is to carry out sampling and laboratory analysis and compare results with the Ghana Raw Water Quality Criteria and Guidelines developed in 2003. The 2010 and 2011 results of the WQI for the monitoring rivers are provided in **Table 5.4**.

The major southwestern rivers in the HFZ include Pra River (includes River Birim, River Offin), River Tano, River Ankobra, Bia River and that of the coastal rivers include River Densu, River Ayensu, River Nakwa-Ochi.

It can be inferred from the **Table 5.4** that all the major rivers mentioned above in the HFZ were of fairly good quality (i.e. Class II) in 2010 and 2011. The only exceptions are the Pra River Quality, which was poor (i.e. *Class III*) in 2011 as measured at Twifo Praso and River Offin Quality, which was also poor (i.e. *Class III*) in 2011 as measured at Dunkwa-on-Offin. The poor quality is due to mining activities in these areas.

**Table 5.4: Water Quality Indices (WQI) for River Basins**

Station	2010					2011				
	March	July	Oct	Mean	Class	March	July	Oct	Mean	Class*
Weija Lake	54.8	60.8	68.9	61.5	II	59.3	65.6	34.8	53.2	II
Potroase - R. Densu	64.0	86.5	77.4	76.0	II	62.8	53.3	70.6	62.2	II
Mangoase - R. Densu	62.4	53.3	56.3	57.3	II	50.8	62.4	43.6	52.3	II
Nsawam - R. Densu	51.8	49.0	60.8	53.9	II	51.8	57.8	47.6	52.4	II
Mankrong J-R. Ayensu	67.2	65.8	43.6	58.9	II	68.9	56.3	53.3	59.5	II
Osino - R. Birim	62.4	53.3	54.8	56.8	II	60.8	51.8	41.0	51.2	II
Akim Oda-R Birim	54.8	57.8	62.4	58.3	II	64.0	49.0	47.6	53.5	II
A Brenase-R. Pra	74.0	59.3	59.3	64.2	II	70.6	51.8	49.0	57.1	II
Twifo-Praso - R. Pra	59.3	53.3	64.0	58.9	II	60.8	47.6	39.7	49.4	III
Daboase - R. Pra	59.3	56.3	54.8	56.8	II	62.4	51.8	51.8	55.3	II
Dunkwa-On-Offin -R. Offin	57.8	57.8	57.8	57.8	II	51.8	49.0	46.2	49.0	III
Adiembra - R. Offin	64.0	59.3	60.8	61.4	II	65.6	59.3	41.0	55.3	II
Lake Barekese - R. Offin	65.6	47.6	65.6	59.6	II	70.6	50.4	50.4	57.1	II
Lake Bosomtwe	51.8	57.8	59.3	56.3	II	54.8	56.3	38.4	49.8	III
E Ekosi-R. Ochi-Nakwa	50.4	57.8	68.9	59.0	II	62.4	56.3	53.3	57.3	II
Mankesim-R. Ochi-Amisa	67.2	56.3	57.8	60.4	II	62.4	72.3	53.3	62.7	II
Baafikrom Reservoir	68.9	75.7	68.9	71.2	II	65.6	68.9	68.9	67.8	II
Lake Brimso-R. Kakum	62.4	51.1	65.6	59.7	II	82.8	50.4	49.0	60.7	II
Ewusijo-R. Butre	62.4	81.0	70.6	71.3	II	68.9	62.4	70.6	67.3	II
Bonsaso - R. Bonsa	72.3	59.3	65.6	65.7	II	60.8	53.3	60.8	58.3	II
Hiawa	51.8	56.3	70.6	59.6	II	50.4	49.0	46.2	48.5	III
Dominase - R. Ankobra	50.4	54.4	60.8	55.2	II	72.3	49.0	50.4	57.2	II
Prestea - R. Ankobra	60.8	64.0	65.6	63.5	II	57.8	50.4	54.8	54.3	II
Elubo - R. Tano	57.8	59.3	75.7	64.3	II	68.9	60.8	53.3	61.0	II
Sefwi-Wiawso - R. Tano	62.4	44.7	70.6	59.2	II	64.0	50.4	64.0	59.5	II
Tanoso - R. Tano	64.0	65.5	60.8	63.4	II	57.8	68.9	56.3	61.0	II
Dadieso R. Bia	50.4	56.3	75.7	60.8	II	65.6	53.3	60.8	59.9	II
Aframso - R. Afram	60.8	53.3	53.3	55.8	II	74.0	68.9	47.6	63.5	II
Hohoe - R. Dayi	88.4	74.4	59.3	74.0	II	65.6	64.0	42.3	57.3	II
Damanko - Oti	67.2	53.3	64.0	61.5	II	70.6	62.4	56.3	63.1	II
Sabari - R. Oti	68.9	59.3	68.9	65.7	II	79.2	53.3	53.3	61.9	II
Saboba -R. Oti	60.8	64.0	67.2	64.0	II	70.6	54.8	49.0	58.1	II
Pwalugu -White Volta	70.6	44.9	51.8	55.8	II	64.0	64.0	51.8	59.9	II
Nabogo - White Volta	75.7	47.6	62.4	61.9	II	64.0	53.3	64.0	60.4	II
Daboya - White Volta	68.9	59.3	56.3	61.5	II	75.7	54.8	54.8	61.8	II
Buipe - Black Volta	74.0	64.0	53.3	63.8	II	75.7	62.4	64.0	67.4	II
Bamboi - Black Volta	88.4	57.8	59.3	68.5	II	82.8	65.6	44.9	64.4	II
Ajena - Main Volta	75.7	81.0	62.4	73.0	II	72.3	86.5	49.0	69.3	II
Kpong - Main Volta	77.4	67.2	67.2	70.6	II	70.6	75.7	59.3	68.5	II
Sogakope - Lower Volta	65.6	65.6	72.3	67.8	II	62.4	68.9	36.0	55.8	II
>80: Class I - Good water quality					50 – 80: Class II - Fairly good water					
25 – 50: Class III - Poor water quality					< 25: Class IV- Grossly polluted water					

Source: WRC Catchment-Based Monitoring Project in Ghana, Final Report, March 2012.



### 5.1.5 Relief and Topography

The country is characterized by fairly low relief with few areas of moderate elevation in the north and east. Physiographic regions include the coastal plains, the forest dissected plateau (which falls within the HFZ), and high hill tops which are important ecological subsystems in a generally undulating terrain. At the southern and northern margins of the Volta Basin, there are two prominent areas of highland – the Kwahu Plateau (Kwahu West/East/South and Atiwa districts are within the HFZ), and the Gambaga Escarpment. On the eastern margins of the Volta Basin is a relatively narrow zone of high mountains running in a south-west to north-east direction with the Akwapim, Buem, Togo Ranges (Akuapim North and South districts are within this range) registering the highest point (Mt. Afadjato, about 885m) in the country. The relief map of the HFZ is shown in **Figure 5.5**.

The topography of the country (see Figure 2) is mainly undulating with most slopes less than 5% and many not exceeding 1%. The topography of the high rainforest is, however, mainly strongly rolling. The uplifted edges of the Voltarian Basin give rise to narrow plateaux between 300 to 600 m high. Despite the general undulating nature of the terrain, about 70% suffer from moderate to severe soil erosion (Boateng, 1998).

### 5.1.6 Soils Classification in the HFZ

The soil classification map of the HFZ is shown in **Figure 5.6**. The local classification system of soil in Ghana is based on characteristics that are the result of the major climatic differences that in turn have given rise to two major distinct vegetation belts, namely, Forest and Savannah.

#### **Forest Ochrosols**

Forest Ochrosols cover approximately 3,672,865 hectares (ref. **Figure 5.6**) within HFZ and occur in all the five regions. They are red, brown and yellow-brown, well to imperfectly drained soils occurring on summits, upper, middle and lower slopes. Such soils have a marked concentration of organic matter in the upper topsoil (A horizon) with strongly leached lower horizons (CEPA 2000).

Forest Ochrosols are by far the most extensive and the most important soils within the Forest belts for both food and tree cash crop cultivation. Such soils, under natural conditions contain adequate nutrients that are tied-up with the organic layers in their topsoils. They can, therefore, sustain good crop growth. As soon as the Forest is cleared for cultivation, however, the nutrient level is drastically reduced and crops are adversely affected. They are suited for extensive food crop and tree cash crop cultivation of such crops as cocoa, coffee, oil palm, black pepper, sweet berry, nutmeg, ginger, cassava, plantain, cocoyam and maize.

#### **Forest Oxysols**

These are found largely within the extreme south-western part of the country where they extend over approximately 532564 hectares within the HFZ (ref. **Figure 5.6**). They are generally more paler in colour and more acid than Forest Ochrosols and characterised by deeply weathered, yellow, moderately well drained, acid, medium to moderately heavy textured upland soils either over phyllite (Boi series) or over granite (Abenia series) or developed in tertiary sands in which case the soil is mainly reddish brown to brown, well drained and medium textured (Tikobo series) (CEPA 2000). Rainfall within areas occupied by Forest Oxysols is generally within the annual average of 2,000 mm. Forest Oxysols are generally unsuitable for cocoa. Tree cash crops such as rubber and oil palm are found cultivated in this soil type.



### Local Soil Classification Map Of The Cocoa-Forest Mosaic Landscape (HFZ)

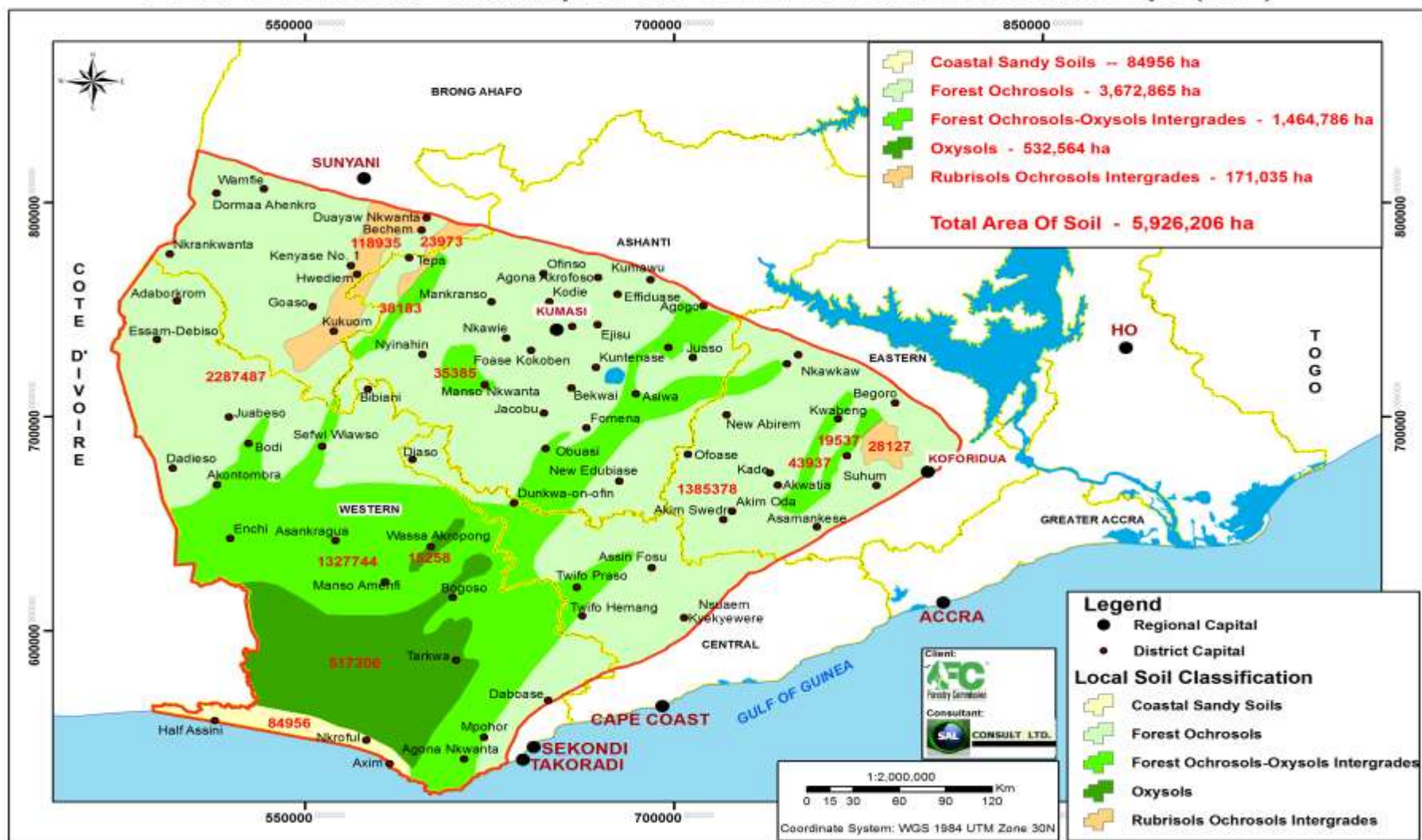


Figure 5.6: Soil Classification in the Cocoa-Forest Mosaic Landscape



### ***Forest Ochrosols-Oxysols Intergrades***

The forest ochrosols-oxysols intergrade are mainly found in the Moist Evergreen Ecological zone in the Western Region, and occupy about 1,464,786 hectares of the HFZ (ref. **Figure 5.6**). There are bands or strips of the soil class that stretches into or occur in the Central, Eastern and Ashanti Regions as shown in **Figure 5.6**. As the name suggests, the soils possess characteristics of both forest ochrosols and forest oxysols, though they may have more characteristics of the forest oxysols than the forest ochrosols. Due to the high rainfall area in which they are found, the soils are severely leached with high acidity. They have low amounts of nutrients compared to the forest ochrosols and they are more suitable for crop cultivation compared to the forest oxysols. They support the growth of food crops and are more suitable for tree cash crops such as rubber, cocoa and oil palm.

### ***Forest Rubrisol-Ochrosols Intergrades***

Forest Rubrisols-Ochrosols are formed from an underlay of hornblende and biotite granodiorites, epidiorites, dolerite intrusions and green stones that have been found to give rise to soils that are intermediate between true Rubrisols and Ochrosols. They are limited in extent, occupying only about 171,035 hectares (ref. **Figure 5.6**) within the HFZ and found mainly in the Eastern, Ashanti and Brong Ahafo Regions. They are more fertile, have a better moisture holding capacity and are more resistant to erosion than both the Ochrosols and the Oxysols. They are thus capable of offering a better medium for the prolific growth of arable and tree cash than the much more widespread Forest Ochrosols (CEPA 2000).

#### ***5.1.7 Agro-ecological zones and selected crop yield***

Ghana is divided into six major agro-ecological zones (see **Table 5.5**) and these agro-ecological zones from north to south are:

- Sudan Savannah Zone;
- Guinea Savannah Zone;
- Transition Zone (Forest Savannah Transition);
- Semi-deciduous Rain Forest Zone;
- Rain Forest Zone; and
- Coastal Savannah Zone.

The bimodal rainfall pattern in the Forest, Deciduous Forest, Transitional and Coastal Savannah zones gives rise to major and minor growing seasons. In the Guinea/Sudan Savannah (i.e. Northern Savannah) the unimodal distribution results in a single growing season. The rainfall determines largely the type of agricultural enterprise carried out in each zone. The Cocoa Forest Mosaic Landscape/HFZ falls within the Rain Forest and the Semi-deciduous Rain Forest Zones.

**Table 5.5: Agro-ecological zones**

Zone	Area ('000 ha)	Percent of total area	Mean annual rain (mm)	Growing period (days)	
				Major season	Minor season
Rain Forest	750	3	2,200	150-160	100
Deciduous Forest	740	3	1,500	150-160	90
Transition	6,630	28	1,300	200-220	60
Guinea Savannah	14,790	63	1,100	180-200	-
Sudan Savannah	190	1	1,000	150-160	-
Coastal Savannah	580	2	800	100-110	60

Source: SRID, 2001.



The major food crops grown in the different agro-ecological zones are given in **Table 5.6**.

**Table 5.6: Major crops grown in the agro-ecological zones**

Zone	Cereals	Starchy Crops	Legume	Vegetables	Tree crops
Rain Forest	Maize, rice	Cassava, cocoyam, plantain	-	Pepper, okra, eggplant	Citrus, coconut, oil-palm, rubber
Semi-deciduous Rain Forest	Maize, rice	Cassava, cocoyam, plantain	Cowpea	Pepper, okra, eggplant, tomato	Citrus, oil-palm, coffee, cocoa
Forest-Savannah Transition	Maize, rice, sorghum	Yam, cocoyam, plantain, cassava	Cowpea, groundnut	Tomato, pepper, eggplant, okra	Citrus, coffee, cashew
Guinea Savannah	Maize, rice, sorghum, millet	Yam, cassava	Cowpea, groundnut, bambara	Tomato, pepper	Shea-nuts, cashew
Sudan Savannah	Maize, rice, sorghum, millet	Sweet potato	Cowpea, groundnut, bambara	Tomato, onion	-
Coastal Savannah	Maize, rice	Cassava	Cowpea	Tomato, shallot	Coconut

The average yield of selected food crops under rain-fed conditions is provided below.

**Table 5.7: Average Yield of Selected Food Crops under Rainfed Conditions**

Crop	Average Yield (Mt/Ha) 2010	Achievable Yield (Mt/Ha)
Cassava	13.8	48.7
Plantain	11.0	20.0
Yam	15.3	49.0
Cocoyam	6.7	8.0
Maize	1.7	6.0
Rice (Paddy)	2.4	6.5
Cowpea	1.3	2.6
Soybean	1.5	2.3
Groundnut	1.5	2.5
Millet	1.3	2.0
Sorghum	1.3	2.0
Sweet Potato	8.0	24.0
Taro	9.5	12.0
Cocoa	0.4	1.0
Coffee	1.5	-
Cashew	0.8	1.8
Orange	35.0	-
Pawpaw	45.0	75.0
Mango	11.0	-
Pineapple	50.0	72.0
Cotton	0.8	-
Rubber	0.8	-
Tobacco	1.6	-
Tomato	7.5	15.0

Garden eggs	8.0	15.0
Pepper	6.5	32.3

Note: Indicates yields that have been achieved in cases where more effective extension and use of recommended technologies have occurred. The dashes indicate crops for which no on-farm research findings were available as far as potential yields were concerned. Data on achievable yields have been revised in line with new findings by the Crop Research Institute.

Source: Source: MoFA (2010) Agriculture in Ghana – Facts and Figures

### 5.1.8 Vegetation/Ecological Zones

The natural vegetation is determined by the different climatic conditions and influenced by different soil types and altitudinal differences. A closer look at Ghana's vegetation cover reveals a pronounced environmental gradient from the evergreen rainforest of the western coasts through to the dry semi-deciduous forest of the forest-savannah transition to the savannah environment of the northern regions. This ecological difference of Ghana has been well classified by Hall and Swaine (1981). The classification is based on the gradual change in forest composition, from the south west, where the rainfall is highest and the forests are evergreen, towards the savannah in the east and north, where the forest is dry and deciduous. The vegetation/ecological map of Ghana is shown in **Figure 5.7**.

The nine Vegetation/Ecological Zones are:

1. Wet Evergreen;
2. Moist Evergreen;
3. Moist Semi-deciduous South East;
4. Moist Semi-deciduous North West;
5. Dry Semi-deciduous;
6. Upland Evergreen;
7. Southern Marginal;
8. Savannah (Guinea subtype); and
9. Savannah (Sudan subtype).

The description information on these Ecological Zones provided below are taken from the Ghana MRV Final Report prepared by Indufor Oy in January 2015.

**1. Wet Evergreen (WE):** Rainfall exceeds 1750 mm per annum. It can rain throughout the year. The vertical structure is compressed and Trees rarely exceed 40 m. It has a mean basal area of 25.5 m<sup>2</sup> ha<sup>-1</sup> and mean density of 445 stems ha<sup>-1</sup> of all trees ≥ 10 cm dbh. There is scarcity of deciduous trees in the canopy (less than 20%), and very rich species diversity with about 200 tree species found in this zone. There is no fire damage. Soils show severe effects of leaching with soil pH ranges from 3.8-4.3.

**2. Moist Evergreen (ME):** Mean annual rainfall is between 1500 and 1750 mm. It is sandwiched between WE and moist semi-deciduous. It has less floristic diversity with about 170 tree species. The vertical height of the trees is about 43 m. The deciduous canopy trees account for less than 20%. Basal area estimated at 23.5 m<sup>2</sup> ha<sup>-1</sup> and stem density is about 505 trees ha<sup>-1</sup>. It has experienced little fire damage. Soil is poorer in nutrients compared with drier forests.

**3. Moist Semi-deciduous South East (MSSE):** Mean annual rainfall is between 1250 and 1750 mm. It is the wet part of the semi-deciduous forest. A mixture of evergreen and deciduous tree species and it is the

most productive among the forest zones. It has few tree species (about 100) but majority of commonest species in Ghana achieve their greatest frequency here. It has the tallest trees, heights often exceeding 50-60 m. Less depletion of soil nutrients compared to WE and ME, and soil pH = 5-6. Less fire damage to the forest reserves than MSNW and DS. Mean basal area is estimated at 23.2 m<sup>2</sup> ha<sup>-1</sup>.

**4. Moist Semi-deciduous North West (MSNW):** Mean annual rainfall is between 1250 and 1500 mm. The drier part of the moist semi-deciduous contains several species rare in Ghana. It is also made up of mixture of evergreen and deciduous species. Most of the country's forest reserves are concentrated here. The vertical structure is similar to MSSE. It has frequent wild fires which have caused some damage to forest reserves in the northern portions of this zone. Mean basal area estimated at 22.6 m<sup>2</sup> ha<sup>-1</sup>.

**5. Dry Semi-deciduous (DS):** This zone was formerly sub-divided to inner and outer (fire) zones. It has a wide range of annual rainfall ranging between 1000 to 1500 mm. The zone has about 156 tree species and the vertical structure ranges from 30-45 m. It is heavily degraded because of frequent fires which have led to frequent salvage logging of its economic species. Most of the forest reserves in this zone are being converted to plantation forest.

**6. The Upland Evergreen** is a mixture of wet and moist forest species. It has three major forest reserves namely the Atewa Range, Atewa Range Extension and Tano Ofin.

**7. The Southern Marginal forest** is shorter than 30m, has thick undergrowth and may include high densities of multiple species.

**8. The Savannah** vegetation is predominantly in the northern territories of the country where mean rainfall is low. It is predominantly made up Guinea Savannah and Sudan Savannah (the boundaries between the two are not distinct). These zones have short vertical structure ranging between 20 to 30 m on average. They are also characterised by low species diversity and most species in this zone are fire resistant.

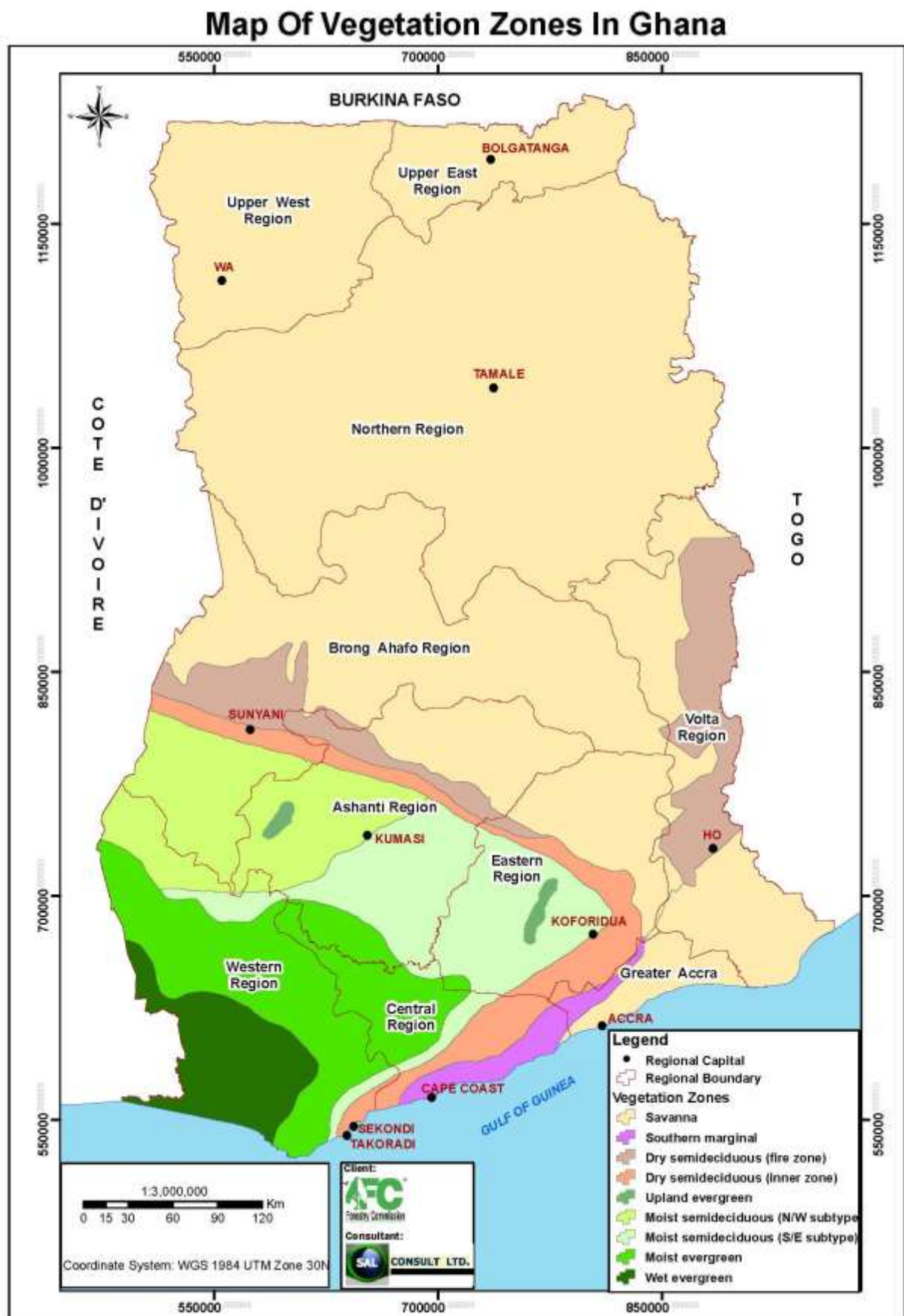


Figure 5.7: Vegetation/Ecological Map of Ghana

### 5.1.9 Forestry Resources and Land Use

#### 5.1.9.1 Forest Definition and Land Use and Land Cover Classification

The forest definition applied for the reference level assessment is:

*“A piece of land with a minimum area of 1 hectare, with a minimum tree crown cover of 15%, [or] with existing tree species having the potential of attaining more [than] 15% crown cover, with trees which have the potential or have reached a minimum height of 5.0 meters at maturity in situ”.*

This was conveyed to the UNFCCC Secretariat on 21st July 2011 and fits into the IPCC guidelines, the FAO FRA and the Marrakesh Accord.

Land use cover classification for Ghana

- Ecological Zones for Ghana
  - Wet Evergreen (WE)
  - Moist Evergreen (ME)
  - Upland Evergreen
  - Moist Semi-deciduous North West (MSNW)
  - Moist Semi-deciduous South East (MSSE)
  - Dry Semi-deciduous (DS)
    - Semi Deciduous (fire zone)
    - Semi Deciduous (inner zone)
  - The Southern Marginal
  - The Savannah vegetation
- The Primary Designated Use (PDU) of forest land in Ghana is:
  - Off-Reserve:
  - Forest Reserves (or On-Reserve):
- The Legal Management Scheme (LMS):
  - Gazetted Forest Reserves (are forest areas that fall within the permanent forest estate that were legally constituted and their boundaries well defined. They are managed by the Forestry Commission of Ghana in trust of the people. It comprises of Forest Reserves for the production of timber and provision of environmental services, National Parks and Game Production Reserves).
  - Non Gazetted Forest Reserves (are areas that fall outside the gazetted forest reserves. Timber exploitation is regulated by the FC but ownership is vested in the individual landowners).
    - Sacred Groves
    - Dedicated Forest

#### 5.1.9.2 On-reserve and off-reserve Information

Ghana's forests are divided into forest reserves and 'off-reserve' areas. Forests broadly fall into two vegetation zones, each with different vegetation and forest types: the High Forest Zone covering 34% (**ref: Figure 5.8**) and the Savannah Zone covering 66% of the land area. Out of the 266 forest (production or protection) reserves, 216 occur in the high-forest, timber-producing zone, and the remainder occur in the savanna. The permanent protection areas consist largely of hill sanctuaries, swamp sanctuaries, shelterbelts, special biological protection areas, intact forest sanctuaries and fire protection areas.

Total reserved forest area is about 2.5 million ha in 266 gazetted Forest Reserves (FRs). Forests and lands outside of designated FRs (including protected areas) are commonly referred to as off reserve areas. In the HFZ there is about 1.6 million ha in 216 forest reserves (FR). About 0.35 million ha are protected areas for biodiversity and other protective functions, while the rest are assigned productive functions. The Savannah Zone covers 14.7 million ha of woodlands and includes some 0.88 million ha of reserves, of which Mole National Park alone is about 0.5 million ha.

**Table 5.8** provides a description of protected areas in Ghana and **Table 5.9** provides some figures relating to forest in Ghana. The key terms used in **Table 5.9** are explained below:

- Primary forest refer to forest of native species where there are no clearly visible indications of human activities and the ecological processes have not been significantly disturbed.
- Modified natural forests are forests of naturally regenerated native tree species in places with indications of human activities.
- Semi-natural forests are forests of native tree species, established through planting, seeding or assisted natural regeneration.
- Forest plantations are forested areas artificially established by planting or seeding.
- Production plantation is where the objective of the forest plantation is for the production of wood and non-wood goods, and not for ecosystem service or environmental protection.

Within the HFZ, cocoa farms, subsistence crops and fallow lands are dominant land use types. Off-reserve forests are found over roughly 6.5 million ha distributed as trees and forest patches in agricultural lands, forest fallows, riparian forests, sacred groves etc. Hansen *et al.* (2009) provided the following estimates for land use classification of the HFZ: Natural forest (664,000 ha); Secondary forests (184,000 ha); Fallow (1,441,000 ha); Cleared (recently) farms (439,000 ha); Cocoa farms (1,001,000 ha); Food crops (1,236,000 ha); Grasslands (439,000 ha); and other land (102,000 ha). **Table 5.10** also provides some land use categorization information from MoFA.



### Map Of Forest And Game Reserves Within The Cocoa-Forest Mosaic Landscape (HFZ)

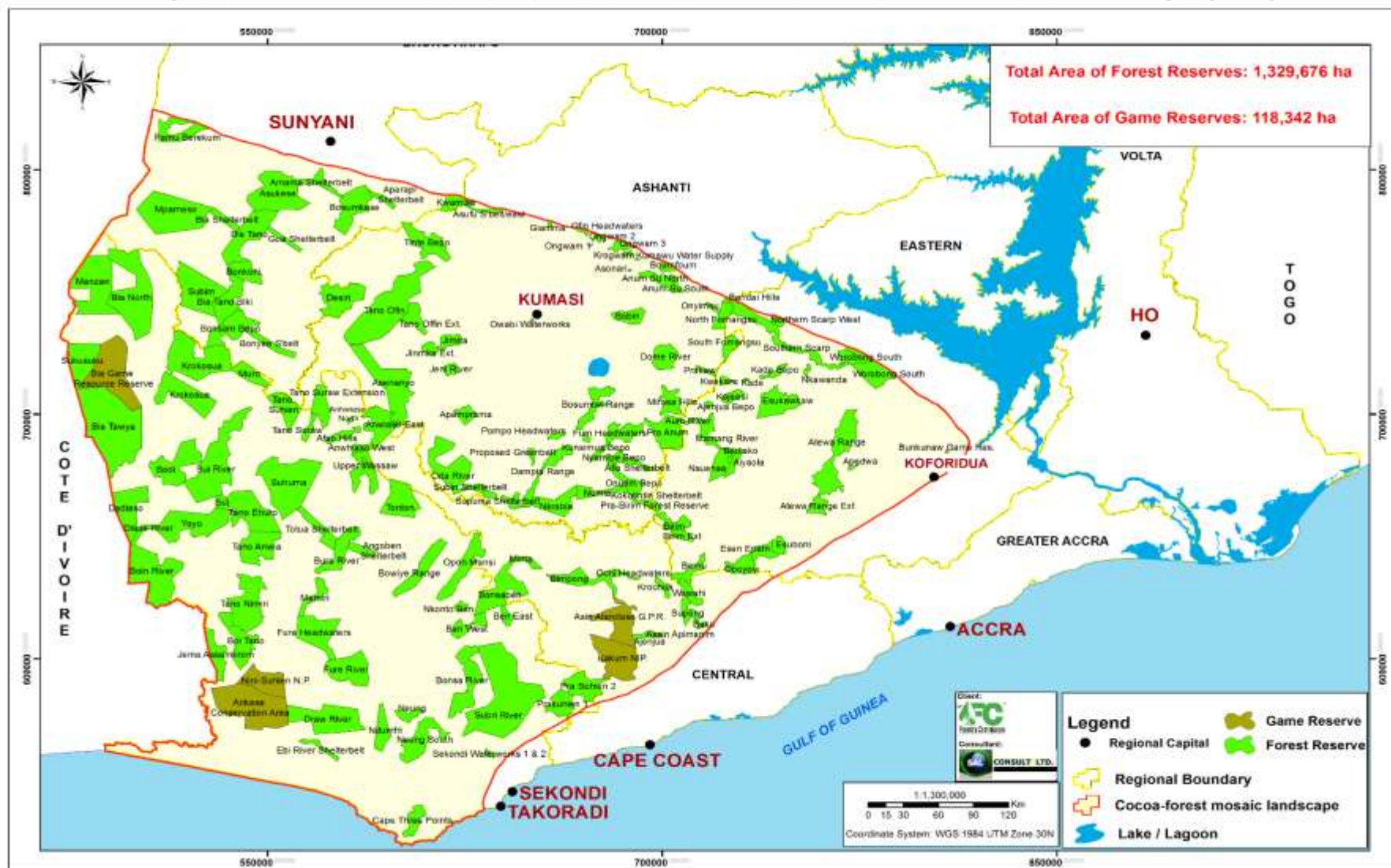


Figure 5.8: Forest Reserve Map within the HFZ



**Table 5.8: Description of Protected Areas in Ghana**

Typology	Area	Comments
Off-Reserve areas	201,000 km <sup>2</sup>	Off-reserve areas are lands which are currently (or were) forests but where the policy presumption is that these lands would be converted to other use in particular, e.g. agriculture and infrastructure. This includes 5,000 km <sup>2</sup> of unreserved forests, 60,000 km <sup>2</sup> of bush fallow, 71,000 km <sup>2</sup> of savanna woodland, 36,000 km <sup>2</sup> of unimproved pasture, and 29,000 km <sup>2</sup> of tree and annual crop land
Forest Reserves	26,000 km <sup>2</sup>	<p>Areas which have been designated as forest reserves are areas where no farming or settlement is allowed (except for in “admitted” farms or settlements, that were usually present at the time of reservation of the forest).</p> <p>They are divided into four depending on their Primary Designated Use or their major management objective.</p> <ul style="list-style-type: none"> <li>• Production Forest: These are Forest Reserves or areas within Forest Reserves managed primarily for timber production, 715,000 ha. Logging is conducted by TUC Holders and Concessionaires using set out rules and procedures under guidance and monitoring by the Forestry Commission.</li> <li>• Protection Forest: These are Forest Reserves or areas within Forest Reserves where logging is not permitted and the forest is managed solely for environmental protection.</li> </ul>
Dedicated Forests	4 km <sup>2</sup>	Dedicated forests are designed to enable communities to manage their own forest ‘reserves’ based on approved management plans. These are in the form of patches of forests, sacred groves and secondary forests in off-reserve areas. A dedicated forest management scheme was initiated in 1994, under a pilot scheme, two communities were assisted to declare Dedicated Forests (215 ha & 190 ha), in Fosu district to determine the feasibility of communities. The results proved so positive, and draft legislation and a programme to promote dedicated forests were formulated in 1997, but no further action was taken.
Sacred Groves	Unknown	Sacred Groves: are usually intact forest in off-reserve areas conserved and protected by local communities through customs, norms and beliefs. There are numerous sacred groves throughout Ghana but they have no legal status and are extremely small in most instances.
Protected Areas (National Parks)	10,500 km <sup>2</sup>	Generally a large and relatively undisturbed area of outstanding natural value containing representative samples of major natural regions, features or scenery and containing one or several entire ecosystems and not materially altered by man (or reflecting longstanding cultural land management practices). The areas should be accessible to the public, have high recreational, educational, inspirational and cultural potential of clear benefit to the local people, the region and the nation.
Resource Reserves (Game Production Reserve)	1,664 km <sup>2</sup>	Areas of variable size in which habitats are managed to guarantee conditions essential to the well being of selected species for the sustained production of wildlife products (meat, timber, pasture, fruits, honey and other Non Timber Forest Products (NTFPs) for cultural practices, tourism and trophy hunting. These areas may be managed by a central authority, or through agreement, by other levels of government, special trusts or local community institutions as appropriate under the overall supervision of WD.

Typology	Area	Comments
Wildlife Sanctuaries	66km <sup>2</sup>	Wildlife sanctuaries can be created on state land or local land. There is a revenue sharing mechanism at Agumatsa Wildlife Sanctuary in place. (Community 57%, FC 23% and Hohoe Dist Assembly 20%).
CREMAs	30km <sup>2</sup>	The Community Resources Management Area (CREMA) is a legally recognized unit of management that is capable of managing the wildlife resources within the defined area. Devolution of authority to the CREMA to the Executive Committee is conditional and confers the right to restrict access to the common property and extra-farm resources. This provides the incentives for sustainable management of wildlife resources. The first CREMA (Amokwasuazo) to be established has received the authority to manage its resources. <b>Table 5.11</b> shows the current list of CREMAs in Ghana. The FC currently has no map for the list of CREMAs in Ghana.
GSBAs	2,302 km <sup>2</sup>	These are areas in protected Reserves or areas within Forest Reserves selected for biodiversity conservation and are of interest to the international community due to its high genetic index. Are legally established globally significant biodiversity areas identified within the existing forest reserve system, forming a potential network of thirty forest reserves which are proposed for either full (11 reserves) or partial (19 re-serves) protection to provide global security for floristic diversity, these include GSBAs and Southern Dry Forests the Provenance Protection Areas. <b>Figure 5.10</b> shows forest reserves serving as GSBAs in the HFZ.
Strict Nature Reserve (SNR)	385 km <sup>2</sup>	Only 1 Strict Nature reserve, Kogyae, has been created. Originally created from a Forest Reserve it was taken over by the WD in 1971 and established as an IUCN Category I strict nature reserve. However, the WD has been unable to evict a number of farms and settlements that have occurred within the reserve.
Ramsar Sites	1,784 km <sup>2</sup>	6 Ramsar sites are listed as wetland sites of international importance and only the Owabi Ramsar site in the Ashanti Region is within the HFZ ( <b>Ref. Figure 5.11</b> ). Under the Convention there is a general obligation for the Contracting Parties to include wetland conservation considerations in their national land-use planning. They have undertaken to formulate and implement this planning so as to promote, as far as possible, "the wise use of wetlands in their territory".

(Source: Modified and adopted from WRC (2010) National Baseline Studies and Institutional analyses towards the development of the national IWRM Plan)

**Table 5.9: Ghana's forest figures**

Forest Issue	Parameter	Estimate
Forest Cover	Total forest area	5,517,000 ha
	Percentage of land area	24.2%
	Primary forest cover	353,000 ha
	Percentage of land area	1.5%
	Percentage of total forest area	6.4%
Deforestation rates (2000-2005)	Annual change in forest cover	-115,400 ha
	Annual deforestation rate	-2.0%
	Change in deforestation rate since '90s	4.2%
	Total forest loss since 1990	-1,931,000 ha
	Total forest loss since 1990	-25.9%
Forest classification	Public	100%
	Private	0%
Forest use	Production	22.7%
	Protection	6.4%

Forest Issue	Parameter	Estimate
	Conservation	0.8%
	Social services	1.2%
	None or unknown	68.9%
<b>Forest area breakdown</b>	Total area	5,517,000 ha
	Primary	353,000 ha
	Modified natural	5,004,000 ha
	Semi- natural	-
	Production plantation	160,000 ha
<b>Plantations</b>	Plantations, 2005	160,000 ha
	Percentage of total forest cover	2.9%
	Annual rate change (2000 to 2005)	20,000,000 ha
<b>Carbon storage</b>	Above ground biomass	726 Mt
	Below ground biomass	267 Mt
<b>Number of tree species in IUCN red list</b>	Number of native tree species	680
	Critically endangered species	19
	Vulnerable	94
<b>Wood removal, 2005</b>	Industrial round-wood	1,205,000 m3 o.b.
	Wood fuel	28,253,000 m3 o.b.
<b>Value of forest products, 2005</b>	Industrial round-wood	US\$31,265,000
	Wood fuel	-
	Non- wood forest products	-

(Source: WRC (2010) National Baseline Studies and Institutional analyses towards the development of the national IWRM Plan)

**Table 5.10: Land use categories in Ghana (MoFA, 2001)**

Land Use (General)		Area	Percentage
		Million km2	%
1.	Forest Reserves (266 F.Rs)	2.60	11
2.	Wildlife Reserves	1.35	5.6
3.	Unreserved closed forest	3.85	16.3
4.	Unreserved Savannah Woodland	7.1	30.0
5.	Annual Crops	1.2	5.0
6.	Bush Fallow and other uses	6.0	25.0
7.	Cultivated Tree Crops	1.7	7.1
8.	Total	23.8	100

(Source: Adapted from Ghana Forestry Report-Draft, March 2012)

**Table 5.11: List of CREMAs in Ghana**

	<b>Name of CREMA</b>	<b>Closest Park</b>	<b>Size(ha)</b>	<b>District /Region</b>	<b>Year established inaugurated</b>	<b>Status</b>	<b>Constituent communities</b>	<b>Collaborating organization</b>
1	Amokwawsuazo	Ankasa Resource Reservee	3201	Jomoro / WR	2003	Functional	9	WD
2	Cocotown-Ghana Nungua	Ankasa Resource Reserve	2816	Jomoro / WR	2009	Functional	4	WD
3	Tweakor- Navrongo	Ankasa Resource Reserve	4502	Jomoro / WR	2009	Functional	5	WD
4	Ohiamadwen-Fiasoro	Ankasa Resource Reserve	4284.55	Jomoro & Ellembelle/WR	2009	Functional	4	WD
5	Sendu Ansongkrom (Fia)	Ebi Forest Reserve	5698.05	Ellembelle & Jomoro/WR	2009	Functional	4	WD
6	Ayinase ayawora	Draw Forest Reserve	3971.37	Ellembelle / WR	2009	Functional	7	WD
7	New Adiembra	Nini Suhien NP & Draw Forest Reserve	3921.99	Ellembelle /WR	2009	Functional	4	WD
8	Asomase- Dadwen	Nini Suhien NP	8236.381	Ellembelle / WR	2009	Functional	4	WD
9	NAPTOMAN	Nini Suhien NP	9285.90	Wassa Amenfi West / WR	2009	Functional	7	WD
10	Jema-Asemkrom	Jema-Asemkrom Forest Reserve	ND	Aowin-Suaman / WR	Ready to be inaugurated		7	Care International
11	Elluokrom	Bia Conservation Area (BCA)	7950	/WR	27/05/2010	Functional	11	WD
12	Krokosua Hills	BCA	4,580.66	/WR	27/05/2010	Functional	10	WD
13	Kwamebikrom stool lands	BCA	7,277	Bia/WR	27/05/2010	Functional	9	WD
14	River Asoupri	BCA	6,133	Bia/WR	27/05/2010	Functional	4+satellites	WD
15	Cape three points Princess Town	Cape Three Points Forest Reserve	6,353	Ahanta West/WR	Inaugurated September 2010	Functional	11	WD
16	Akyekyere-Sureso-Pebase	Bura River and Mamiri Forest Reserves	9,107	Wassa Amenfi West/WR	4/03/2011	Functional	20	WD

17	Murugu-Mogmori	Mole National Park (MNP)	23,777		Inaugurated	Functional	2	Arocha/WD
18	Kunlog (Jilinkon)	MNP	15,084		Inaugurated		1+Satellites	WD
19	Yazori-Kaden	MNP	40,000			Creation still in progress	2	Arocha
20	Zukpiri Wildlife Sanctuary	Gbele Resource Reserve	4,200	Nadwoli/UW	19/08/2011	Functional	15	Zintang/GEF SGP
21	Kalvaa CREMA	Gbele Resource Reserve	20	Nadwoli/UW	Initiated in 2007	Preparation towards establishment	10	
22	Wechiau Hippo Sanctuary	Gbele Resource Reserve	24,000	Wa West / UW	05/05/2011 inaugurated	Functional	ND	NCRC/WD
23	Pusupu- Akyem	Kyabobo National Park	8,768	Nkwanta South/ VR	Not inaugurated	Creation still in progress	3	WD
24	Avu- Lagoon	Keta Lagoon Ramsar	30,000	Keta Municipal, Akatsi, and South Tongu/ VR	Not inaugurated	Creation still in progress	14	NCRC/WD
25	Chasia					Proposed		
26	Dupare					Proposed		
27	Sanyiga Kasena Gavara Kara	South of the Nazinga Game Ranch in Burkina Faso	58,726	Kassena- Nankana west District U/E Sissala East District U/W	13 <sup>th</sup> January, 2016	Inaugurated	9	WD
28	Asunafo North CREMA	Biodiversity Inventory monitoring Unit, Goaso	21,574	Asunafo North Municipal Assembly B/A.	Not inaugurated	Creation still in progress	36, plus satellite	Conservation Foundation
29	Lake Bosomtwe		28,907	Bosomtwi District, Bosome Freho District A/R	December 16, 2014	Inaugurated	24	EPA/WD
30	Moagduri Wuntanluri Kuwomsaasi		105,329.324	Mamprusi- Moagduri District N/R	Not inaugurated	Creation still in progress	11	WD
31	Bulsa Yenning		42,985.38	South District, U/E	Not inaugurated	Creation still in progress	10	WD

**NB: Shaded rows of CREMAS located in the HFZ**

### Globally Significant Biodiversity Areas (GSBA) Within The Cocoa-Forest Mosaic Landscape (HFZ)

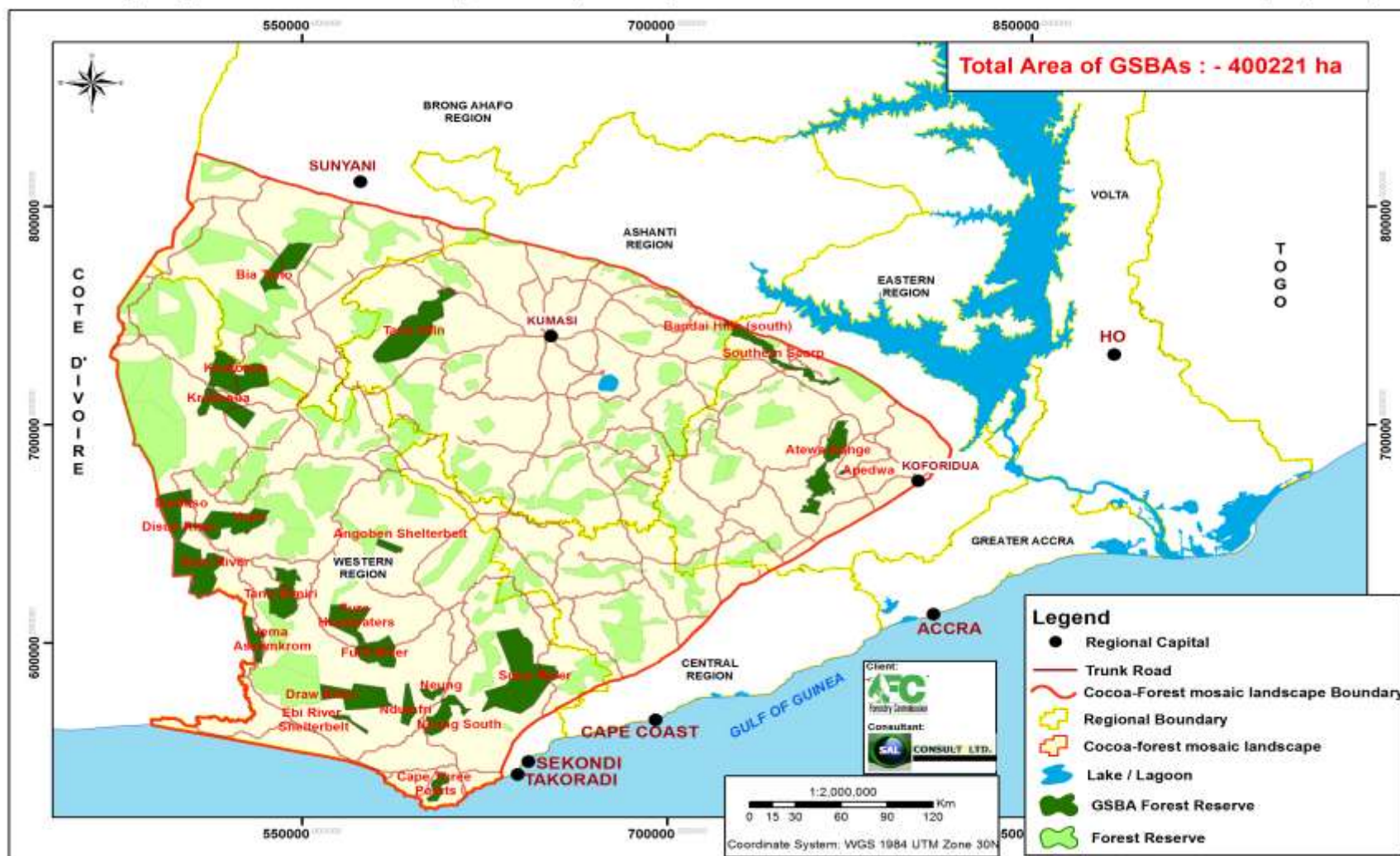


Figure 5.9: Forest Reserves designated as GSBA's within the Cocoa Forest Mosaic Landscape



### Ramsar Site Map Of The Cocoa-Forest Mosaic Landscape (HFZ)

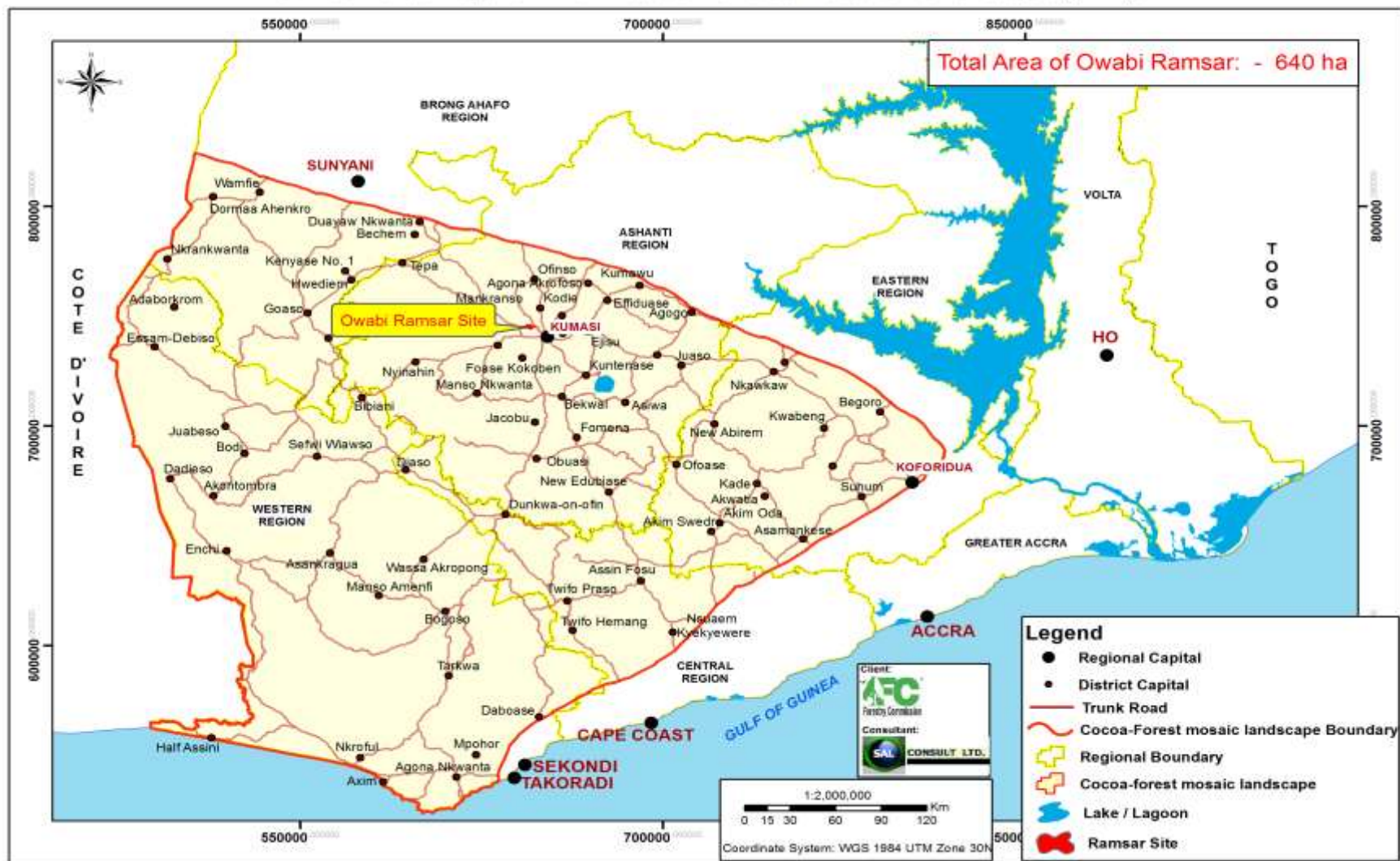


Figure 5.10: Ramsar site within the Cocoa Forest Mosaic Landscape



### 5.1.10 Spatial Analysis and Forest Cover Trends

As part of the SESA, spatial analysis is to be applied in mapping and for overlaying different sets of information to identify critical areas of concentration of environmental and social issues. During the preparation of the SESA Report in 2014, the spatial analysis focused on two regions, Western and Brong Ahafo Regions. For this updated SESA, the focus was on the cocoa forest mosaic landscape of the HFZ. The cocoa sector has been identified as a major economic activity impacting on forest cover in Ghana and is the focal area for Ghana's Emission Reduction Programme.

The following maps were produced for the HFZ:

- 1). Road and Rail Network with Forest Reserves
- 2). Drainage Map with Forest Reserves
- 3). Admitted Farms/Settlements in the Forest Reserves within the HFZ
- 4). 1990, 2000, 2010, and 2015 Land use classified satellite image maps for the HFZ with economic activities like mining, and tree crop commercial plantations such as coconut, oil palm and rubber
- 5). 2015 classified satellite image map for the HFZ with settlements, roads and some economic activities like mining, and tree crop commercial plantations such as coconut, oil palm and rubber
- 6). 1990, 2000, 2010, and 2015 Land use classified satellite image maps for the Forest Reserves
- 7). 2015 classified satellite image map for the forest reserves with settlements and roads

The classified satellite image maps have the following legend:

- Water body
- Closed canopy forest or closed forest
- Open canopy forest or open forest
- Farmland
- Forb/grass
- Settlement/Bare Area
- Coconut
- Open Mine
- Oil Palm
- Rubber
- Wetland

The forest cover trend was carried out to map among others the trend of degradation and to identify hot spots over a period of twenty years using Landsat TM and ETM+ Satellite images taken in 1990, 2000 and 2010 and 2015 for the HFZ and the forest reserves. A summary percentage statistics produced for the HFZ over the period is provided in **Table 5.12** and all the various maps produced from 1990 to 2015 are provided in **Annex 5** with some statistical data included in the maps. **Table 5.13** provides a summary percentage statistics for the forest reserves in the HFZ over the period.

**Figure 5.11** shows the Forest Reserves with admitted farms/settlements. **Figures 5.12** and **5.13** respectively show the classified satellite images with some other land uses for 1990 and 2015, while **Figures 5.14** and **5.15** show the classified satellite image maps for the forest reserves for 1990 and 2015 respectively.

It is observed that the closed canopy forest cover within the cocoa forest mosaic landscape has declined consistently over the period due to deforestation and degradation. The open canopy forest increased from 1990 to 2010 but saw an improvement, i.e. a decline in 2015. For the forest reserves, the closed canopy forest decreased from 1990 to 2010 period (i.e. 86.9961% to 65.9765% respectively) but saw an improvement or increase in 2015 (i.e. 69.2862%).

Open mine was not noticeable in the forest reserves from 1990 to 2000, but in 2010 it formed about 0.1137% of the reserves and it decreased in 2015 to 0.0842% but this contrast what happened in the cocoa forest mosaic landscape. Open mine which represents both legal and illegal surface mining increased from 1990 to 2015 and from 2010 to 2015 it increased by almost 300% within the landscape, i.e. from 2010 to 2015. Farmland and oil palm coverage also saw almost 100% increment from 1990 to 2015 within the landscape.

**Table 5.12: Summary percentage statistics generated over the 25-year period for the HFZ**

CLASS	1990	2000	2010	2015
Water Body	0.2102%	0.1890%	0.1282%	0.2034%
Closed Canopy Forest	57.3170%	31.1729%	27.3212%	23.0293%
Open Canopy Forest	29.2879%	38.6824%	46.7483%	40.0792%
Farmland	8.4394%	17.9888%	13.8950%	16.3933%
Shrub/Forb / Grass	1.7572%	7.1359%	7.7661%	12.5408%
Settlement / Bare Areas	1.2236%	2.6619%	1.5667%	4.0530%
Coconut	0.5821%	0.6032%	0.6088%	0.5893%
Open Mine	0.0821%	0.2403%	0.4785%	1.4418%
Oil Palm	0.4967%	0.6663%	0.8071%	0.9272%
Rubber	0.2301%	0.2855%	0.3093%	0.3731%
Wetland	0.3737%	0.3737%	0.3708%	0.3697%

**Table 5.13: Summary percentage statistics generated over the 25-year period for the Forest Reserves**

CLASS	1990	2000	2010	2015
Water Body	0.0077%	0.0147%	0.0061%	0.0129%
Closed Canopy Forest	86.9961%	77.0427%	65.9765%	69.2862%
Open Canopy Forest	8.9906%	14.0410%	27.4804%	20.6568%
Farmland	2.9820%	7.5008%	3.8569%	4.6824%
Shrub/Forb / Grass	0.7250%	1.2544%	2.2618%	4.2742%
Settlement / Bare Areas	0.2986%	0.1464%	0.3046%	1.0034%
Open Mine	-	-	0.1137%	0.0842%

# Forest Reserves With Admitted Farms And Settlements Within The Cocoa-Forest Mosaic Landscape (HFZ)

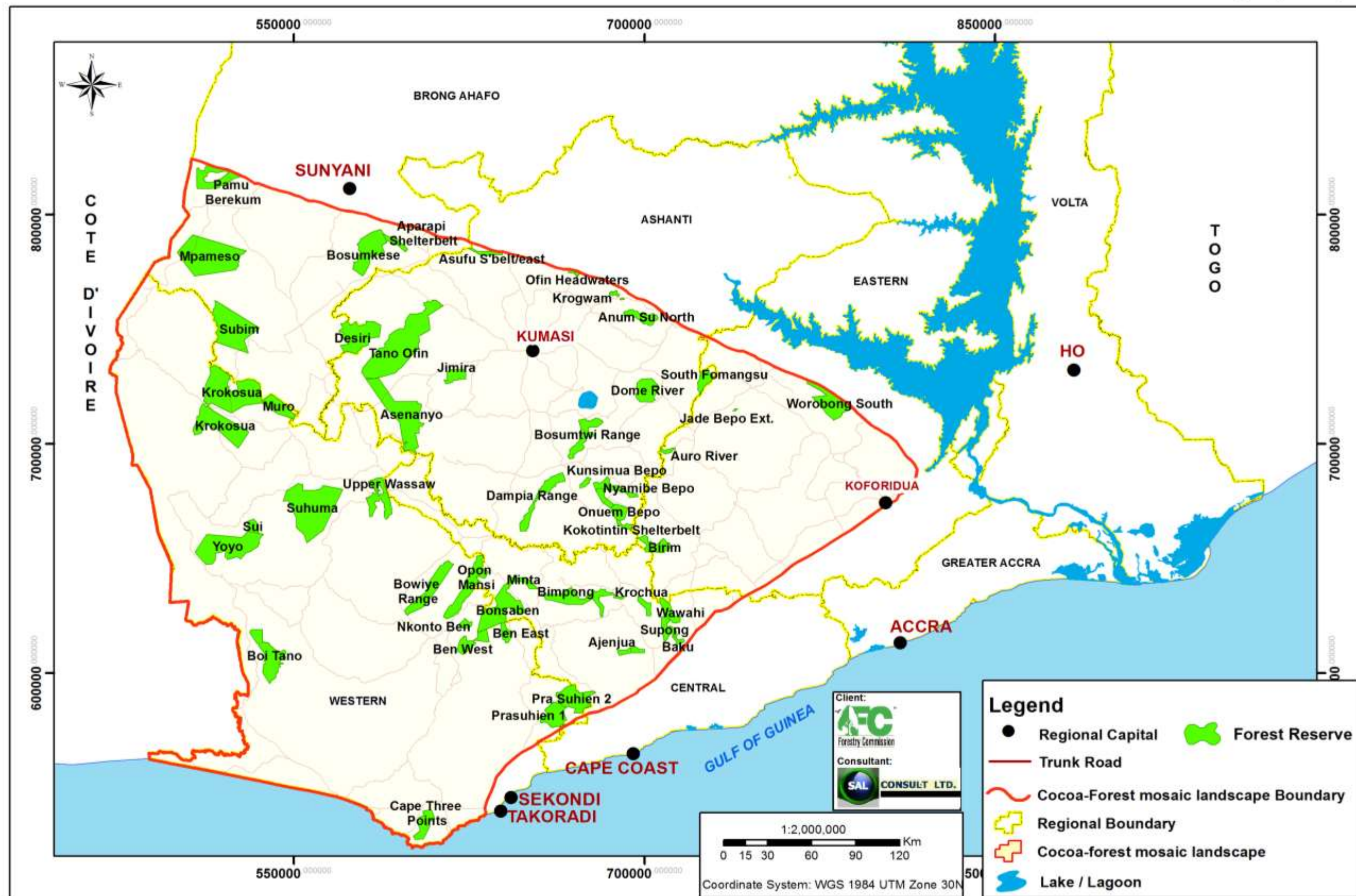


Figure 5.11: Forest Reserves with Admitted Farms/Settlements in the HFZ



## Classified Satellite Image Map Of The Cocoa-Forest Mosaic Landscape (HFZ), (1990)

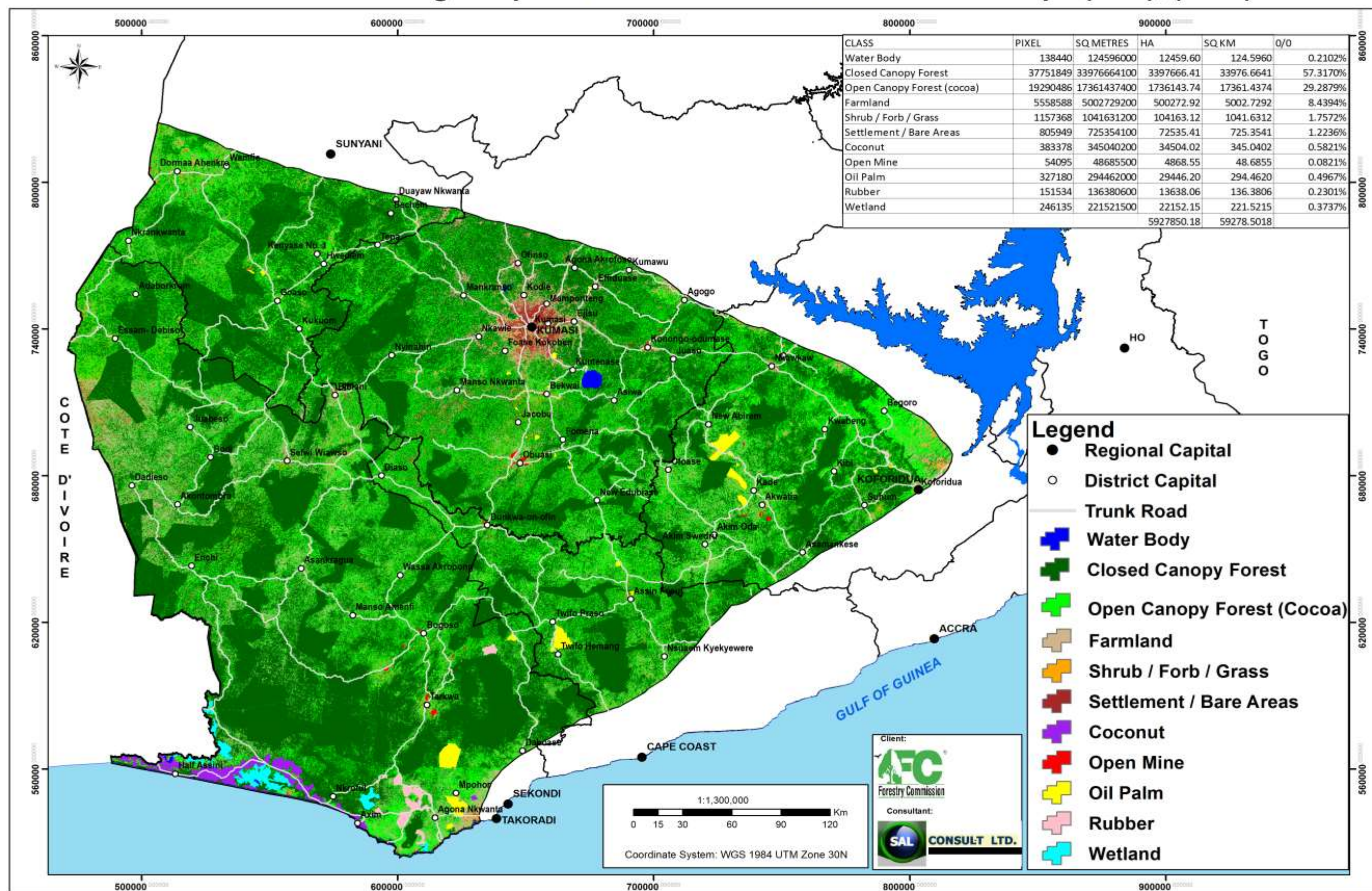


Figure 5.12: 1990 Classified Satellite Image Map of the HFZ



## Classified Satellite Image Map Of The Cocoa-Forest Mosaic Landscape (HFZ), (2015)

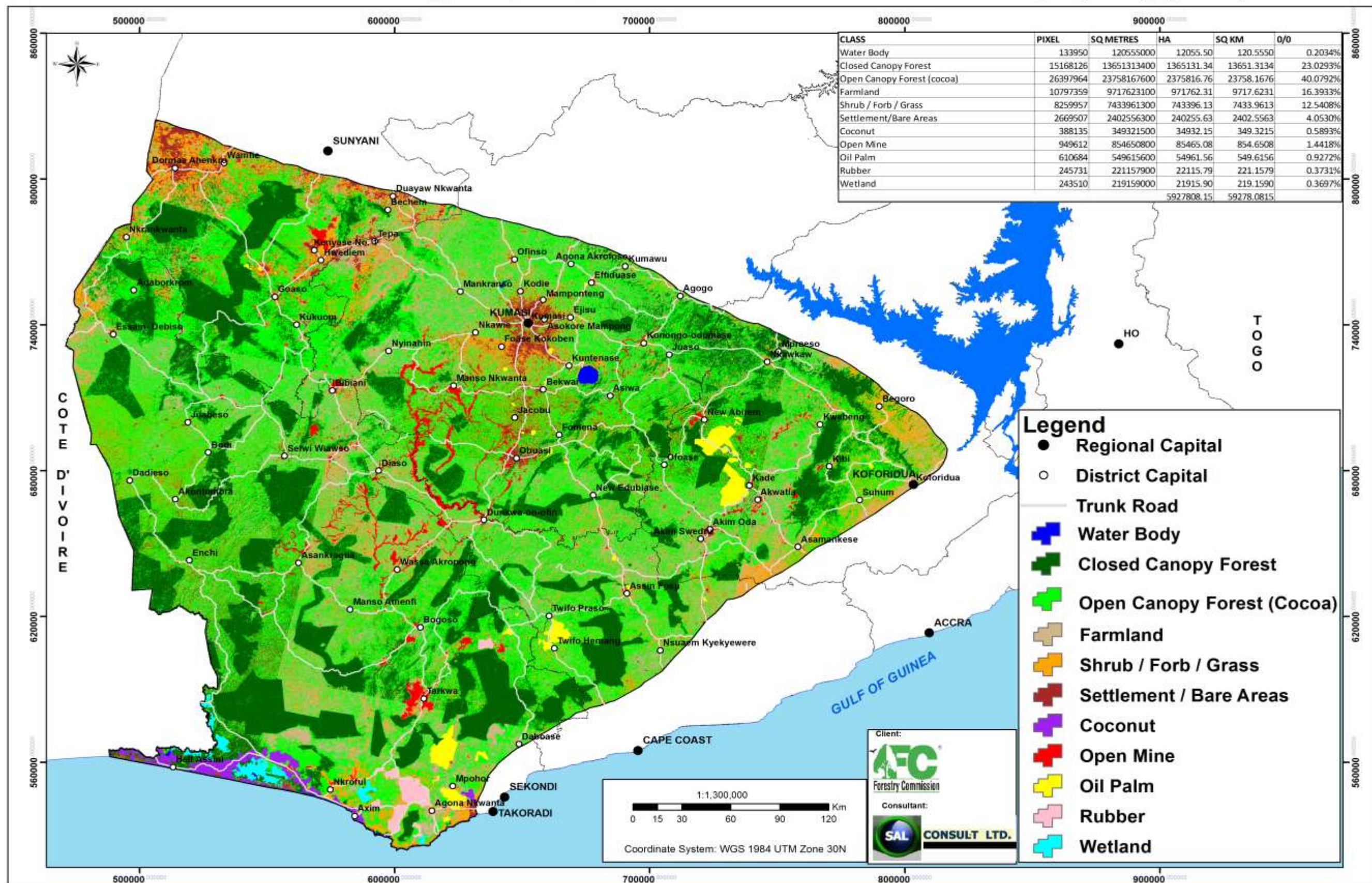


Figure 5.13: 2015 Classified Satellite Image Map of the HFZ



## Classified Satellite Image Map Of Forest Reserves In The Cocoa-Forest Mosaic Landscape (HFZ), (1990)

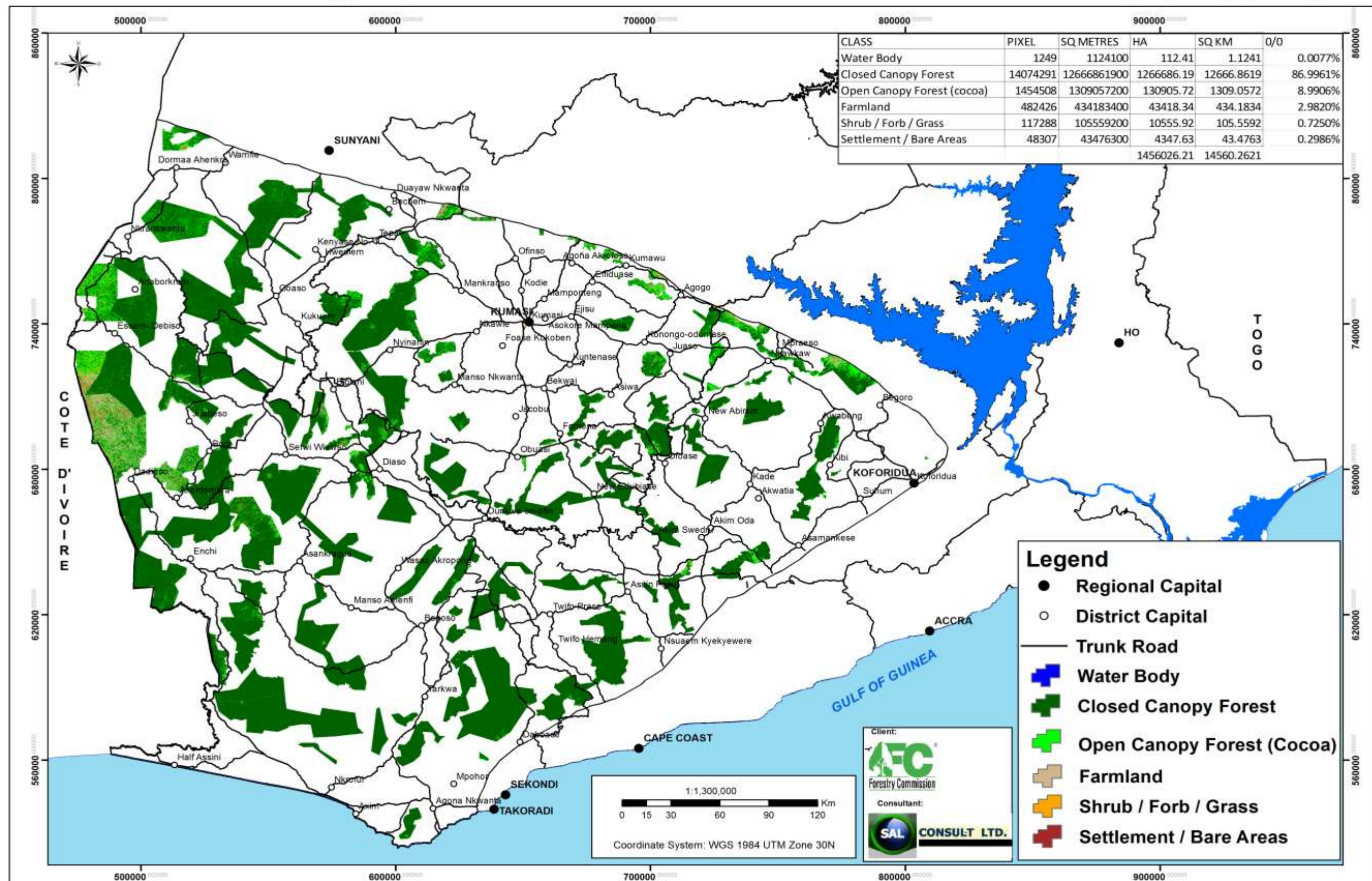


Figure 5.14: 1990 Classified Satellite Image Map of the Forest Reserves within the HFZ



## Classified Satellite Image Map Of Forest Reserves In The Cocoa-Forest Mosaic Landscape (HFZ), (2015)

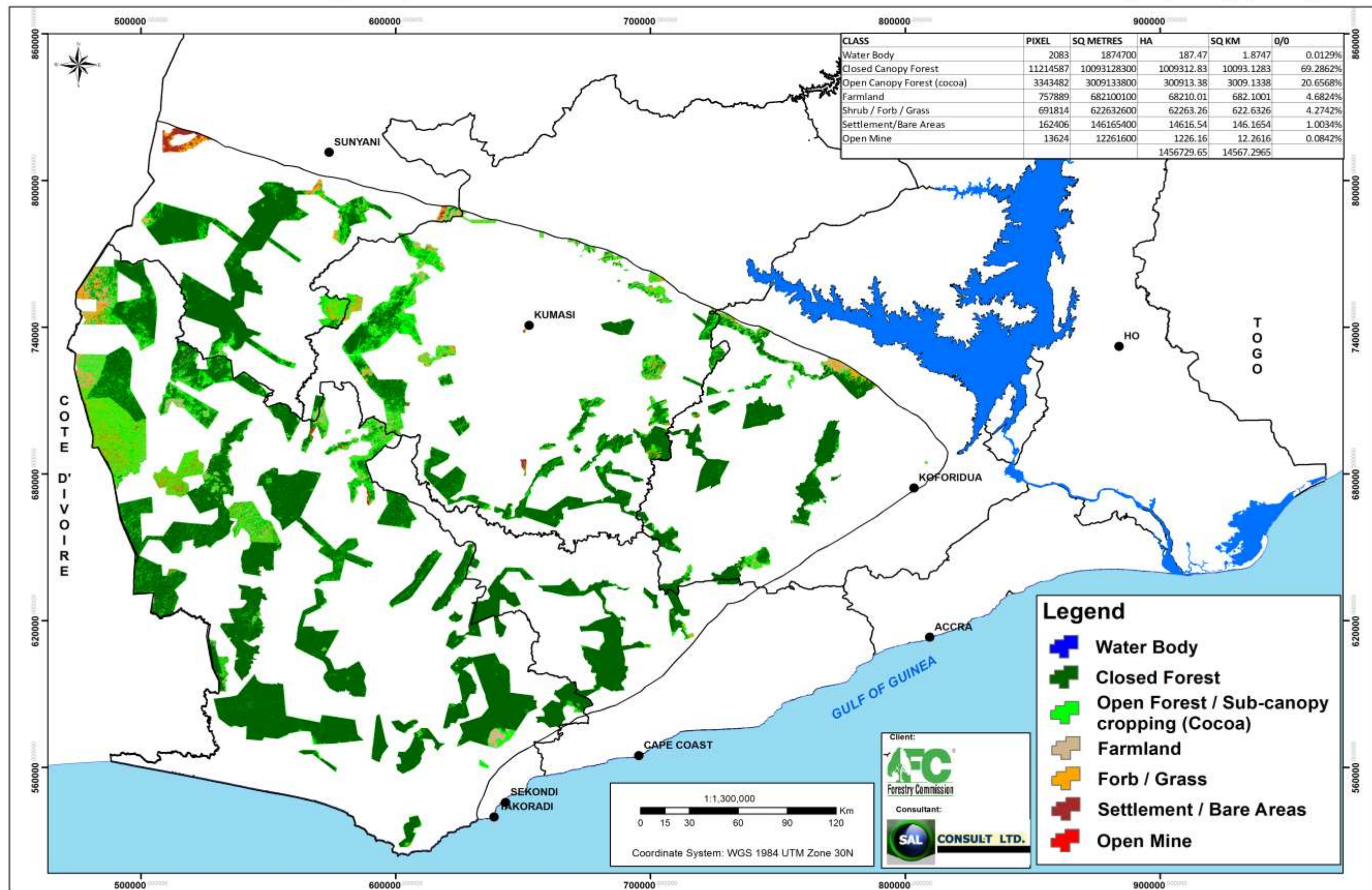


Figure 5.15: 2015 Classified Satellite Image Map of the Forest Reserves within the HFZ



### 5.1.11 Case Study of Selected Forest Reserves

#### Methodology

Field visits were undertaken to ascertain the conditions of selected forest and wildlife reserves in the western region. Interviews were conducted with managers of the forest reserves and protected areas as well as forest edge dwellers to identify the driving forces of forest degradation and deforestation where it is apparent. Discussions were held with the executive officers of the Amokwawusuaso CREMA (Community Resource Management Area), one of 19 certified CREMAS out of a total of 27 country-wide. The detailed report is provided in **Annex 6**.

The conditions of the reserves were classified as follows:

- Almost Extinct – the reserve almost has been converted to other land use and appears unrecoverable e.g. human settlement, farms
- Partially Extinct – over 50% of land area converted to other land use e.g. human settlements and farms and appears recovery will be difficult
- Poor – fragmented, canopy broken in many places due to encroachment by farmers
- Good – largely intact but faces significant threats from competing land use in the near future
- Excellent- completely intact; no threat in the near future

#### Results

##### Conditions of Reserves

Three forest districts and a wildlife conservation area were selected in the Ankasa-Bia-Krokosua corridor for scrutiny (Annex 6). All the forest estates listed above have suffered various degrees of encroachment which has led to massive deforestation.

Some have been completely destroyed and converted into settlements and cocoa farms (e.g. Bodi, Tano Suraw Extension, Tano Ehuro, Bia-Tawya, Anhwiaso East) while some are seriously threatened or threatened (Krokosua, Anhwiaso North and Anhwiaso South). The list of forest districts and wildlife reserves visited and their conditions is shown below and **Figure 5.16** shows the case study map.

<u>Forest/Wildlife Reserve</u>	<u>Condition</u>
Ankasa Conservation area	Good
Enchi Forest District	
Tano Ehuro	Partially Extinct
Tano Anwia	Good
Juaboso-Bia Forest District	
Bia Tributaries North	Good
Krokosua	Poor
Sukusuku	Almost Extinct
Manzan	Almost Extinct
Bia-Tawya	Almost Extinct
Bodi	Almost Extinct
Mpesetum	Almost Extinct

**Bibiani Forest District**

Afao Hills	Poor
Anhwiaso North	Poor
Anhwiaso South	Poor
Anhwiaso East	Almost Extinct
Sumtwitwi	Poor
Tano Suraw	Poor (restricted Gold mining)
Tano Suraw Extension	Almost Extinct
Upper Wassaw	Poor

**Recommendations**

The case studies have clearly pointed out the weaknesses inherent in our legal regimes and institutional structures that have resulted in the large scale deforestation and forest degradation of the forest reserves studied. The following recommendations are proposed to help address some of the issues identified.

1. Declassification of reserves – it is recommended that the almost extinct forest reserves should be declassified as such.
2. The judicial system - special tribunals should be set up to speedily dispose of litigation in forest reserves. Injunctions granted should restrain both parties' access to land in dispute
3. Penal system - this should be reviewed to make fines and penalties deterrent
4. Provision of adequate resources – the FC should provide adequate resources (human, financial and equipment) for monitoring and restoration activities in the protected areas
5. Motivation – staff should be adequately motivated to prevent corruption
6. Demarcation and refinement of admitted farm boundaries – This should be undertaken as a matter of urgency to curb the menace posed by admitted farm expansions

**5.1.12 Analysis of Carbon Stock Distribution**

Ghana's terrestrial carbon stocks are estimated to total 7.46 GtCO<sub>2</sub>e, comprising 6.22 GtCO<sub>2</sub>e, in above- and below-ground biomass and about 1.24 GtCO<sub>2</sub>e in soil carbon to 1 m depth (Katoomba Group *et al.* 2011a). Reflecting rainfall and vegetation zones, biomass and soil carbon are distributed unevenly over the country. Areas of high biomass carbon density contain 6% of Ghana's biomass carbon but cover only 2% of the country's land area. High carbon density areas are associated with intact natural forest in the moist forest zone and contain over 730 tCO<sub>2</sub>e/ha in above and below-ground biomass, and soil carbon (Katoomba Group *et al.* 2011a). Although the total area is small, mangroves also contain substantial carbon stocks per unit area.

Land-use and land-use change has added significant heterogeneity and variation in carbon stocks. Broadly carbon stocks decline from southwest to northeast, and moving from intact forest to increasingly open farming landscapes. The national biomass map shows that the highest biomass is in the HFZ, with carbon stocks (above and below-ground biomass, and soil carbon) ranging from 180 to more than 700 tCO<sub>2</sub>e/ha. In the entire savannah and the transitional zone, i.e. the northern two-thirds of the country carbon stocks are on the average below 140 tCO<sub>2</sub>e/ha.

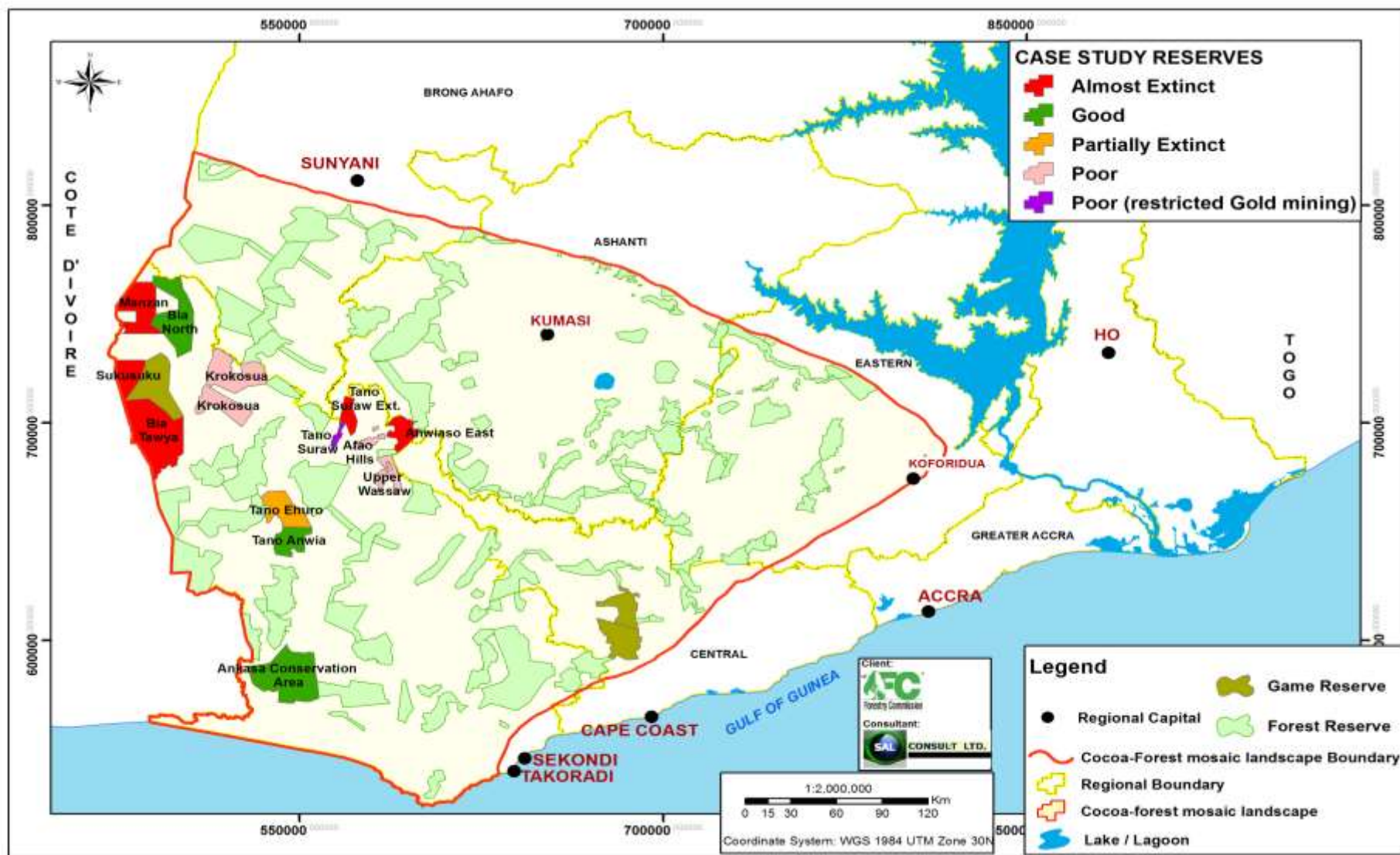


Figure 5.16: Case Study Reserves Map

Data on soil carbon stocks is limited. Conservative estimates based on IPCC default values estimate Ghana's soil carbon stocks to be about 260 tCO<sub>2</sub>e/ha (RoG 2010b). Soil carbon stocks in the high forest zone and savannah zone would range from 110 – 340 tCO<sub>2</sub>e/ha and from 100 – 125 tCO<sub>2</sub>e/ha respectively. In the cultivated areas within the high forest zone soil carbon stocks range from about 100 – 260 tCO<sub>2</sub>e/ha, while the respective estimates in the savannah zone would be 70 – 160 tCO<sub>2</sub>e/ha (Abu-Bredu *et al.* 2010, Katoomba Group *et al.* 2011b).

### **5.1.13 Carbon Emissions**

According to Ghana's second national communication to the UNFCCC, Ghana's total emission in 2006 was about 24 MtCO<sub>2</sub>e, amounting to around 1.1 tCO<sub>2</sub>e per capita. Ghana's emissions were still low by global standard (0.05%) and ranked 108 in the world. However, the rapidly growing oil and gas sector (already third in export earnings in 2011) is changing Ghana's overall emissions profile. Consequently Ghana's position in the world ranking for overall emissions is expected to change dramatically in next few years.

Emission data for the period 1990 – 1996 indicates that the country was a net sink due largely to high levels of carbon sequestration in the Land Use, Land Use Change and Forestry (LULUCF) sector (66%) in 1990. However, Ghana's Second National Communication to UNFCCC estimated a 96% decrease of the net greenhouse gas removals within the LULUCF sector from around -26.1 MtCO<sub>2</sub>e in 1990 to -1.04 MtCO<sub>2</sub>e in 2000, and 5.6 MtCO<sub>2</sub>e in 2006. Since 2001 the sub-sector has become a net emitter, contributing 25%, of total emissions in 2006.

Deforestation and conversion of forests and grasslands was the major reason for this change accounting for 20% share of total LULUCF emissions in 1990 to 50% in 2006. This together with changes in forest and woody biomass accounted for 95% of the LULUCF emissions in 2006. Ghana's low carbon growth plan estimates that 65% of baseline emissions come from land use changes, whilst a further 10% comes from the burning of biomass. Combined, these are estimated to produce 42.3 MtCO<sub>2</sub>e emissions. Nevertheless, the importance of baseline emissions from land use changes will have to be reviewed as Ghana's low carbon growth plan has not adequately incorporated the emissions from the rapidly growing oil and gas sector in the overall emissions.

### **5.1.14 Climate Change and Vulnerability Issues**

#### **5.1.14.1 Meteorological characteristics and climate change trends**

The Ghana Meteorological Agency (GMA) has 22 synoptic stations, 132 climate substations (of which 116 are operational), and 300 rainfall stations. The Agency collects the following data among others: Precipitation, Temperature, Sunshine hours, Wind direction and speed, Soil temperature, Humidity, Evapo-transpiration, Cloud amount, height and type, Mean sea level pressure, Visibility, Sea surface temperature, Sea level changes, Land cover, Spring Indices, Growing Season, and Water table level.

A number of studies have been carried out to describe meteorological patterns and any associated climate change trends. The recent UNESCO participating programme with the CSIR- WRI generated scientifically based impact- specific information to directly inform the preparation of local and national action plan and adaptation measures on climate change in Ghana. The project simulated the hydrology of the White Volta and Pra river basins using the hydrological model SWAT (Soil and Water Assessment Tool) and estimated

the impact of climate change on hydrology and river flows. The analysis of the temperature and rainfall data are summarised in **Table 5.14** for years 2020 and 2050. The annual mean daily temperatures for the year 2020 for the White Volta and Pra basins are expected to increase absolutely by 0.6°C and 0.5°C respectively, over the baseline 1961 to 1990 values. For the year 2050, temperature is projected to have an absolute increase of 1.9°C in both basins. The two basins may be seen as representing ecological conditions in the northern savanna and the southern forest zones of Ghana.

The results further suggest that, if climate change is not tackled seriously, the impact on rainfall can be severe with the Pra river, and for that matter the south western river system experiencing the more severe impact. It seemed the annual stream flows in the White Volta basin is slightly more sensitive to reduction in annual rainfall amount compared to stream flows in the Pra basin. Assessment of vulnerability of the study basins to water stress conditions based on the Falkenmark indicator (thresholds of 1700, 1000 and 500m<sup>3</sup> per capita per year as water stress, water scarcity and absolute scarcity conditions respectively) revealed that under the assumption of 100% mobilisation (i.e. all the available water in streams in the two basins is used), the White Volta will experience water stress conditions before 2020 and water scarcity after 2050 with or without climate change. The Pra basin is reported to presently experiencing water stress which will worsen to water scarcity condition before 2020, with or without climate change. The basin will experience absolute water scarcity condition before 2050 and much earlier under climate change. A key adaptation measure proposed in the study is the adoption and implementation of integrated water resources management.

With support from the Netherlands Government Climate Change Studies Assistance Project (NCCSAP) the country developed national climate change scenarios and climate change vulnerability assessment studies for water resources and the coastal zone, (UN, 2004). Because of the impact of water resources and climate on agriculture, the impact of climate change on agriculture was also studied.

Major findings were that in the last 30 years the temperature has risen by about 1 °C and the corresponding reduction in rainfall and stream flows were 20% and 30% respectively. Runoff was found to be sensitive to changes in precipitation and temperature for example 10% change in precipitation or 1°C rise in temperature causes a reduction of more than 10% in runoff.

Flow reductions of between 15-20% and 30-40% were observed for simulations using climate change scenarios for years 2020 and 2050 respectively. From the simulations, the reduction in groundwater recharge was between 5-22% by 2020 and 30-40% by 2050.

The rise in minimum and maximum temperatures was highest in the Sudan Savannah. Yield of maize was predicted to decrease by 0.5% in 2000 and by about 7% in 2020. Yield of millet was not affected, as it is more tolerant to higher temperatures.

Irrigation water demand could be affected considerably by climate change. In the humid part of the country, the increase in irrigation water demand due to climate change by 2020 and 2050 are about 40 and 150% of the base period water demand. For the dry interior Savannah, the corresponding increase in 2020 and 2050 are about 150 and 1200% respectively. Hydropower generation could seriously be affected by climate change. The projected reduction by 2020 is about 60% from the base value in the Pra basin.



In the Coastal Zone a total of 1,110km<sup>2</sup> of land area may be lost as a consequence of a 1m rise of sea level. The population at risk is 132, 200, mostly located in the East Coast. Important wetlands especially in the Volta Delta may be lost due to land erosion and inundation. Increased water depths and salinization of lagoons as a result of sea level rise will impact adversely on the feeding of migratory and local birds.

In order to address contingencies resulting from extreme hydrological events and other natural disasters, the National Disaster Management Organisation (NADMO) was established by Act 517 of 1996 and tasked to be responsible for all disaster types and phases in Ghana. NADMO prepares for pre-disaster, disaster, and post-disaster phases. In order to accomplish its objectives, NADMO has set up seven (7) Technical Sub-Committees to cover all types of disasters in Ghana, such as geological and hydro-meteorological, pest and insect infestation bushfires and lighting, epidemic outbreaks, and relief and reconstruction disasters.

**Table 5.14: Hydrological forecasts for the Pra and White Volta basins**

Hydrological parameter	Simulated years	Impact in comparison with 1961 to 1990 base year values	
		Pra basin	White Volta basin
Temperature	2020	+0.5°C	+0.6°C
	2050	+1.9°C	+1.9°C
Rainfall	2020	-17.8%	-12.3%
	2050	-25.9%	-19.6%
Mean Annual stream flows	2020	-22%	-22%
	2050	-46%	-50%

#### 5.1.14.2 Flood Prone Areas in the HFZ

**Table 5.15**, culled from CSIR/WRI (2000), describes the history and consequences of flooding in some river basins in the high forest zone. The major concerns of flooding in the country currently are however in the White and Black Volta basins.

**Table 5.15: History of flooding and consequences in some river basins in the HFZ**

River basin	Flooding incidences/ consequences
<b>South western river basins</b>	
Pra basin	The incidence of flooding which is a periodic feature of the Pra River has been resulting in the creation of a number of health-related problems. For instance, over 60% onchocerciasis infection rate was recorded for all the riparian communities in the Twifo-Heman-Lower Denkyira District in the Pra River basin had, whilst a rate of 2.4-100% was recorded in the East Akim District in the River Birim basin. The town of Bunso registered 100% out of 745 people sampled.
Tano basin	Flooding destroyed 24 houses in Banda Bongase in Sunyani District and rendered 232 persons homeless in 1999. The same floods destroyed 45 acres of farmland and the estimated cost of losses was put at \$42 million (NADMO, Accra, 1999). In other instances, entire villages were cut off from main towns due to the submerging of bridges under floodwaters.
<b>Coastal river basins</b>	
Kakum basin	Floods have a tendency to enhance blackfly breeding by providing suitable sites. Onchocerciasis prevalence rates of 8% and 7.8% were recorded at Adiembra and Abrafo respectively in the Kakum/Bruku basin during the floods. At the Kakum National Park, a major tourist attraction in the Central Region of Ghana, intense blackfly activity with a biting density of 1.2 bite/man/hr was recorded

Source: CSIR/WRI (2000)

#### 5.1.14.3 Drought

The major drought and dry spells occur frequently in northern Ghana than in the HFZ. In the HFZ, there is gradual reduction in rainfall and changes in rainfall patterns and rainy days due to climate change leading to crop failure in such cases. However in the northern savannah, dry spell occur every year within the rainy season. Some years that have actually been labeled as flood years (e.g. 2007) were also drought years. This is due primarily to the variability and inconsistency in the rainfall pattern of the northern regions. The distribution of the frequency of occurrence of drought events in the northern savannah regions from 1970 to 2009 is relatively even in the three regions according to a WRC report (Source: WRC-CCA REPORT SERIES NO. 1, 2010).

#### 5.1.15 Pests Problems

Common pests in the country include: rodents and migratory and outbreak pests such as birds, locusts and armyworms. IPM strategies are recommended and used by some farmers as much as it is possible because there is no one control practice/measure that can provide acceptable control of the target pest.

##### **Rodents**

Rodents, particularly the field rats (*rattus rattus*), the small house mice (*rattus norwegicus*) and multi-mammate shamba rat, (*Mastomys natalensis*) are key pests of food crops. The most affected crops are maize, millets, paddy and cassava. The damage caused by rodents starts at early booting and continues through the mature grain stage as well as the storage stage.

Maize is the most susceptible of all the crops. At the pre-harvest stage, maize is attacked at planting (the rodents retrieve sown seeds from the soil causing spatial germination). The rodents cut and eat the fresh stems and parts of the panicle.

##### **Migratory and outbreak pests**

The key migratory and outbreak pests of economic significance in Ghana are armyworm (*Spodoptera exempta*), birds, and the red locusts.

##### Birds

Birds are serious migratory pests of cereal crops, namely rice, maize, sorghum and millet. With birds, the time of damage starts at heading (formation of the grains) or the early milky stage. Damage involves the sucking of juice from grains or the removal of whole grains from the plant's spike. The major culprits are the weaver birds and the *quelea quelea*. Bird pest problems in agriculture have proved difficult to resolve due in large part to the behavioural versatility associated with their flocking ability as well as the array of food choices available to the flocking birds.

##### Locust

Locusts live and breed in numerous grassland plains/savanna zones. During periods with favourable weather, locusts multiply rapidly and form large swarms that can cause huge damage to plants in a very short period of time. Grasshopper has become increasingly damaging on cereal crops (maize, wheat sorghum, rice and millets) in parts of the country. There being no research done on the management of the pest, farmers are forced to use any recommended insecticide whenever outbreaks occur.

### Armyworm

The African armyworm (*Spodoptera exempta*) is a major threat to cereal production in a number of African countries. It is a major pest of cereal crops (maize, rice, sorghum and millets) as well as pasture (grass family) and therefore a threat to food security and livestock. The problem with armyworms is that they are highly migratory so that larval outbreaks can appear suddenly at alarming densities, catching farmers unawares and unprepared.

Armyworm (*Spodoptera Exempta*) outbreak has occurred in Ghana twice in the last ten years. The first outbreak in the last ten years occurred in 2002 and the second in 2006. Large expanses of farmlands were destroyed in such instances. In the 2002, the outbreak was largely concentrated in the Upper East Regions, and a total of 790 (Ha) were affected in four communities. In 2006, the outbreak occurred in five regions namely Brong Ahafo, Ashanti, Volta, Northern and Eastern regions.

The worms destroyed crops in the grass family like maize, rice and sugar cane etc. In addition, animals that feed on infested pasture got bloated and die. The caterpillar outbreak is a threat to health and environmental sustainability, both of which are among the eight UN Millennium Development Goals.

Due to its economic significance, management and control is centrally co-ordinated by MoFA-PPRSD. Its control combines monitoring in identified breeding areas, forecasting and early warning of potential outbreaks.

### ***Invasive alien species***

Invasive alien species have become a problem in diverse ecosystems in Ghana. They affect both savannahs and tropical forests and they are found on land, in fresh water systems and along the coast in the country. The World Conservation Union (IUCN) identified 26 invasive alien species in Ghana which include following key pests:

- Larger grain borer (LGB), *Prostephenus truncates*;
- Siam weed, *Chromolaena odorata*;
- Water hyacinth, *Eichornia crassipes*;
- Mango mealybug, *Rastracoccus invadens*; and
- Invasive fruit fly, *Aleurodicus disperses*.

These invasive alien species have had a huge adverse effect on the production of major staple food crops such as maize, cassava and plantain and also on the export of mangoes.

Climate change, trade liberalization, and agricultural intensification (introduction of irrigation farming, increased fertilizer use, introduction of new crops and varieties, changes in land use and landscape etc.) could trigger the occurrence of new pest problems. This requires frequent pest risk surveillance and continuous updating of the existing pest list. The EPA and the PPRSD are currently the lead institutions in managing invasive alien species.

## 5.2 Socio-cultural

### 5.2.1 Population and Population Density

The 2010 population census by the Ghana Statistical Service (GSS) for the regions is given in the table below. The population density by region is provided in **Table 5:16**.

**Table 5.16: 2010 Population Figures**

Source: GHANA STATISTICAL SERVICE								
Population by Region and Sex								
	Both Sexes	Male	Female	Region Share			Male	Female
<b>ALL REGIONS</b>	<b>24,658,823</b>	<b>12,024,845</b>	<b>12,633,978</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>48.8</b>	<b>51.2</b>
WESTERN	2,376,021	1,187,774	1,188,247	9.6	9.9	9.4	50.0	50.0
CENTRAL	2,201,863	1,050,112	1,151,751	8.9	8.7	9.1	47.7	52.3
GREATER ACCRA	4,010,054	1,938,225	2,071,829	16.3	16.1	16.4	48.3	51.7
VOLTA	2,118,252	1,019,398	1,098,854	8.6	8.5	8.7	48.1	51.9
EASTERN	2,633,154	1,290,539	1,342,615	10.7	10.7	10.6	49.0	51.0
ASHANTI	4,780,380	2,316,052	2,464,328	19.4	19.3	19.5	48.4	51.6
BRONG AHAFO	2,310,983	1,145,271	1,165,712	9.4	9.5	9.2	49.6	50.4
NORTHERN	2,479,461	1,229,887	1,249,574	10.1	10.2	9.9	49.6	50.4
UPPER EAST	1,046,545	506,405	540,140	4.2	4.2	4.3	48.4	51.6
UPPER WEST	702,110	341,182	360,928	2.8	2.8	2.9	48.6	51.4

Ghana's population exceeded 24 million in 2010, an increase of 28% from 2000. The average annual growth rate is about 2.4% and population is projected to reach 31 million by 2025. Over the past ten years, population density increased from 79 to 102 persons per km<sup>2</sup>. Urban population is about 40%, growing by 4.4%, and expected to reach almost 65% by 2020. Population increase and also urbanization increase will exert demand on natural resources by expansion of agricultural areas and increasing demand for construction wood and for charcoal, especially in urban settings.

**Table 5.17: Population density by region, 1984 - 2010**

REGION	AREA (SQ KM)	2010	2000	1984
<b>GHANA</b>	<b>238,533</b>	<b>103</b>	<b>79</b>	<b>52</b>
WESTERN	23,921	99	80	48
CENTRAL	9,826	224	162	116
GREATER ACCRA	3,245	1,236	895	441
VOLTA	20,570	103	80	59
EASTERN	19,323	136	109	87
ASHANTI	24,389	196	148	86
BRONG AHAFO	39,557	58	46	31
NORTHERN	70,384	35	26	17
UPPER EAST	8,842	118	104	87
UPPER WEST	18,476	38	31	24

Source: Ghana Statistical Service

## 2010 Population Census Of The Cocoa-Forest Mosaic Landscape (HFZ)

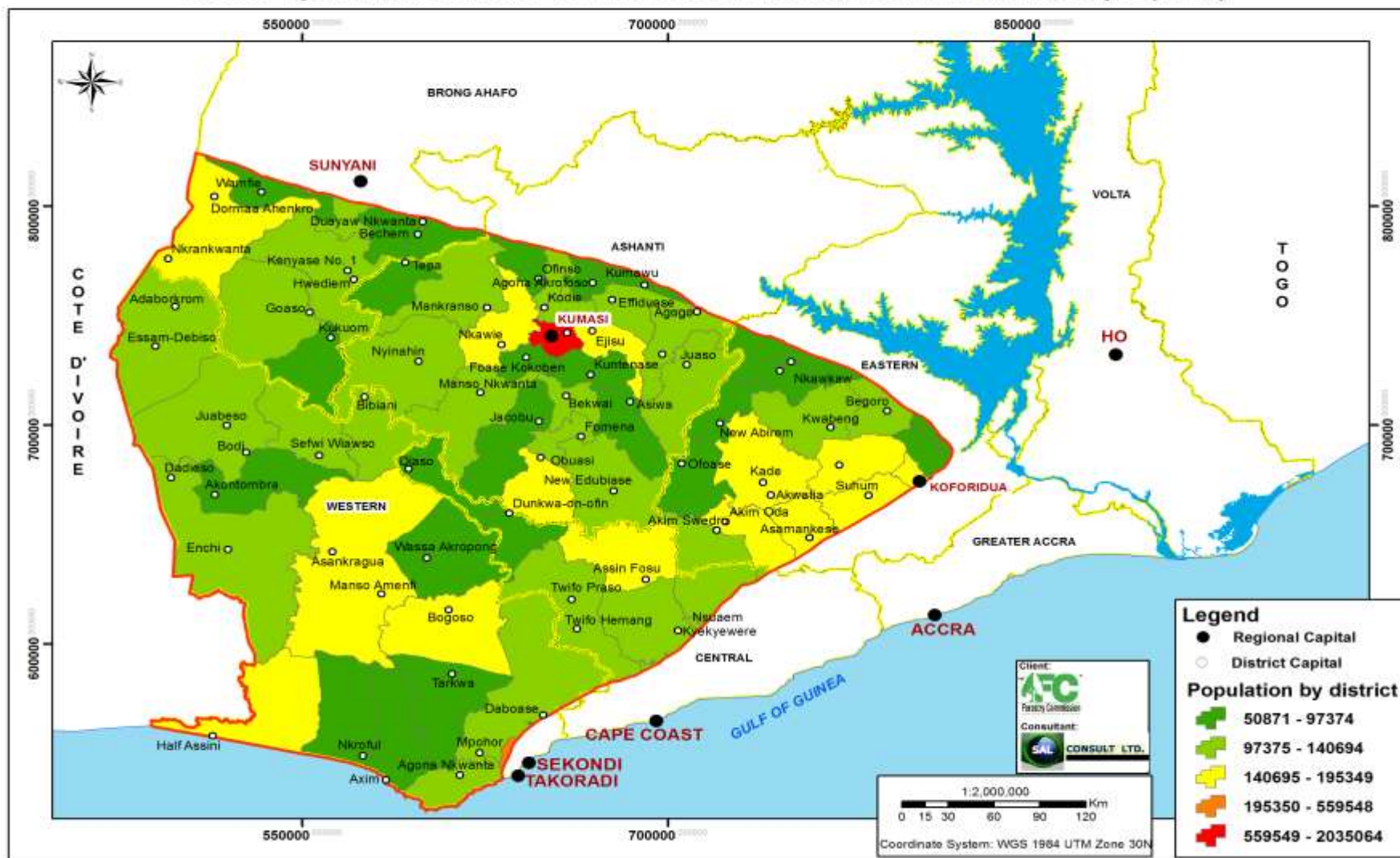


Figure 5.17: District Population Map from 2010 Census



### **5.2.2 Land Ownership and Tenure System**

#### **Land ownership**

Land ownership and tenure in Ghana is governed by a system of common law and customary land law, from which have emerged the following categories of landholdings:

- Customary owned;
- State owned; and
- Customary owned but State managed land (also known as vested land).

#### Customary Ownership

Customary ownership occurs where the right to use or to dispose of use-rights over land is governed by the customary laws of the land owning community, based purely on recognition by the community of the legitimacy of the holding. Rules governing the acquisition and transmission of these rights, which vary from community to community depending on social structures and customary practices, are normally not documented but are generally understood by community members.

The Allodial title, equivalent to common law freehold rights, forms the basis of all land rights in Ghana. Allodial rights are vested either in a stool, a clan, a family, an earth priest or a private individual person. Lesser interests, such as tenancies, licenses and pledges, emanate from the Allodial title.

Customary lands are managed by a custodian (a chief or a head of clan or family) together with a council of principal elders appointed in accordance with the customary law of the land owning community. They are accountable to the members of the land owning community for their stewardship. All grants of land rights by the custodian require the concurrence of at least two of the principal elders for the grant to be valid.

#### State Land

State land includes tracts specifically acquired by government under an appropriate enactment using the state powers of eminent domain. Currently the principal acquiring legislation is the State Lands Act of 1962, Act 125, for public purposes or in the public interest. Under such ownership, Allodial rights become vested in government who can then dispose of the land by way of leases, certificate of allocations, and licenses to relevant beneficiary state institutions as well as private individuals and organizations. The boundaries of these land parcels are cadastral surveyed and are scattered throughout the country.

#### Vested Land

Vested land is owned by a chief, but managed by the State on behalf of the land owning stool or skin. Under such ownership legal rights to sell, lease, manage, or collect rent is taken away from the customary landowners by application of specific laws on that land and vested in the State. Landowners retain equitable interest in the land (i.e., the right to enjoy the benefits from the land). This category of land is managed in the same way as State land. Unlike State land however, the boundaries are not cadastral surveyed and they are usually larger, covering wide areas.

#### **Land tenure rights and issues**

The customary owners (stools, clans, families, and Tendamba) who hold the allodial title, own about 78% of the total land area in Ghana. Of the remaining 22% the state is the principal owner of about 20%, while 2% is held in dual ownership (i.e. the legal estate in the Government and the beneficiary/equitable interest

in the community). Customary owners hold land in custody for communities and various arrangements on land use for community members prevail. The situation has been further complicated by internal migration related primarily to expanding cocoa and in many areas more than 50% of the population are from other parts of Ghana engaged through various arrangements, (lease, share-cropping etc.) in cocoa and other farming activities. Even though the state has elaborate institutional and legal structures for the management of all these types of land, the management of this resource is characterized by incoherent, conflicting and sometimes out-dated legislations.

The separation of land from the resources on land, such as naturally growing trees, is complicating tenure and benefit sharing as well as reducing incentives for maintaining trees on off-reserve lands. Insufficient consultation and engagement of stakeholders in land management has contributed to increased encroachment of acquired lands (including forest reserves), unapproved and haphazard development schemes, uncertainties about titles to land and land litigation. The complexity is illustrated by the number of land litigation cases before the courts, estimated at about 60,000 in 2002. The effect of this is continuous conflicts, overburdening of the judicial processes, over centralization of authority in urban capitals and rent seeking behaviour.

#### **Common land tenure arrangements in cocoa growing areas**

Land for cocoa cultivation can be obtained from individuals, families or stool through crop or land sharing arrangement. The common practices are (i) where the land or crop/produce is shared into two equal parts between tenant farmer and landowner, referred to as locally as 'Abunu', and where the land or crop/produce is shared into three equal parts with the farmer taking 2/3 and landowner taking 1/3, referred to locally as 'Abusa'.

The Abunu system dominates in the cocoa growing areas. The Abunu system is of two kinds, (i) where the cultivated farmland is divided into two equal parts between the tenant farmer and the landowner. In such a case, the tenant farmer has some form of ownership to land. The land usually reverses to the owner for re-negotiation when the cash crop/tree crop is cleared or removed due to disaster or disease or when the life span of crop is over; (ii) where only the crop/produce is divided into two equal parts between landowner and tenant farmer. With this second system, the tenant farmer has no form of ownership to land at all.

#### **5.2.3 Causes of Bush Fires/ Wildfires in Forests**

From the field consultations carried out, the following are the major causes of bushfires that affects forests:

- Farmers use fire to remove vegetation for cultivation or slash and burn before cultivation; sometimes they lose control and wildfires result;
- Some farmers operating in the Forest Reserves (legally or illegally) use fire to ward off bees prior to honey harvesting and for cooking and sometimes they lose control and wild fires result;
- Some farmers operating in the Forest Reserves intentionally set fire to kill forest trees to make space for food/economic crops being cultivated;
- Legal and illegal settlements in forest reserves use fire for their farming or domestic activities and sometimes they lose control and wildfires result;
- Pastoralists/herdsmen use fire to remove dry grass cover in off-reserve areas and to stimulate re-growth of perennial grasses (green flush);

- Alien herdsmen relocated into forest reserves use fire for cooking and to stimulate re-growth of grass;
- Hunters (individuals or group) use fire to chase animals hidden in the vegetation;
- Sometimes, landowners or shea nut gatherers use fire to stimulate the fruiting of shea (Is a belief that is practiced); and

*On some occasions natural fires occur due to thunderstorms, but this is actually rare since thunderstorms mainly occur in the wet season and they are accompanied by rain.*

### **5.3 Brief Country Economic Profile**

Gross National Income per capita was around US\$ 1,283 in 2010 and government policies aim to increase this to US\$3,000 by 2020 (RoG 2010a, World Bank 2011a). Cocoa, timber processing, mining and oil are the main economic activities in Ghana. The agriculture sector, which includes forestry, is the largest contributor (about 40% in 2000 - 2004) to GDP, while forestry alone contributes an estimated 4% (World Bank 2005). Over 70% of the population depends on natural resources for their basic food, water, and energy requirements.

The mining industry, primarily gold, provided the largest share (38%) of the export value in 2011. Cocoa contributed 22% of the export earnings but as the world's second largest producer (21%), after Ivory Coast (38%), the role of the cocoa is significant in the Ghanaian economy. The timber industry export has provided around 10% of the foreign exchange between 1990 and 2000 but there has been a considerable decline since 2005 from 8.1% to only an estimated 1.3% in 2011.

Ghana made significant progress in addressing poverty between 1992 and 2006. Poverty decreased from affecting 51.7% of the population in 1992 to 28.5% in 2006. Increase in wealth was most pronounced in the southern part of the country. Poverty has become concentrated in the three northern regions with 25% of the population but half of the poor (World Bank 2010).

Ghana has made good progress towards the Millennium Development Goals (MDG). Targets on income, poverty reduction, ending hunger, completion of primary education, gender equality and access to clean water are well on track to be met by 2015. Other MDGs, such as sanitation, child and maternal mortality require more effort. The MDG target on environmental sustainability continues to be a challenge, especially the loss of forest area and increasing CO<sub>2</sub> emissions, primarily from land use change and loss of carbon stocks.

The recent discovery of oil, though providing potential for economic growth, increasing wealth, and for financing development, may also increase pressure on forests and natural resources through increasing economic activity, urbanization, building and demand for energy. It may also exacerbate a number of already existing challenges related to natural resources and environmental governance, volatility, agricultural competitiveness and geographical disparities.

#### Forestry sector

The formal forestry and wildlife sector employs about 120,000 Ghanaians, with employment predominantly in log processing industry. The timber industry is the fourth largest foreign exchange earner after minerals, cocoa and oil exports. Primary wood and processed products account for 89% and 11% of timber exports, respectively.

According to the Forestry Development Master Plan (FDMP) in 1996 the annual sustainable harvest is 1 million m<sup>3</sup>, of which 0.5 million m<sup>3</sup> from the FRs based on inventory and yield data, and 0.5 million m<sup>3</sup> from off-reserve forests based on estimates. This latter was later revised to 1.5 million m<sup>3</sup> around 2002, based mainly on economic considerations, and hence the current annual allowable cut (AAC) is set at 2 million m<sup>3</sup>.

The formal forestry sector consisting of around 200 timber processing mills is export-oriented. In 2008 wood products export volume was 586,865 m<sup>3</sup> valued more than US\$300 million, which has since declined to around US\$ 180 million in 2009 and 2010. Only around 15% of the domestic market was supplied by the formal sector.

The informal forestry sector, mainly chain saw milling (CSM), is almost equal in size of formal sector in terms of employment and production. CSM, though illegal since 1998, provides the bulk of the supply (84%) for the domestic market, with estimated volume of around 0.5 million m<sup>3</sup> and market value of around 280 million GHC. It is also the main source of (illegal) overland export lumber to neighbouring countries with an estimated volume of around 260,000 m<sup>3</sup>. It provides employment for around 130,000 people and livelihood for 650,000 people, and is the source of considerable revenue, to the mostly urban financiers of the operations (Marfo 2010). The disconnect between a growing domestic demand and sustainable wood harvest creates huge pressure on forests, particularly in off reserve areas.

In addition to timber, forests provide the main source of domestic energy in the form of fuelwood and charcoal. The average annual per capita wood energy consumption estimate is 1.3 m<sup>3</sup>. This would give a total estimated wood removal of more than 30 million m<sup>3</sup> for fuelwood and charcoal, or about 85% of the total wood removal in Ghana.

Non-timber forest products (NTFPs) are also very important, especially for women, but much of their value is not formally recorded and remains inadequately represented in policy analysis. An estimate of some NTFPs give annual market values around 35 million GHC, while the estimated value of bushmeat is in the range of US\$275 million (World Bank 2005). However, the economic value of NTFPs, for both commercial and household purposes, may locally outweigh that of timber. According to IIED (2008) forest products account for 1/3 of the total household's livelihoods in rural areas, of which 2/3 comes from non-cash income.

#### Agriculture and Cocoa sector

Agricultural crops, both subsistence (e.g. maize, cassava, millet), and cash crops, (e.g. as cocoa, cashew, oil palm and coffee) make up 64% of the natural capital of Ghana. There has been reasonable growth in the agriculture sector, with crops and livestock growth at 4.3% (2000 – 2004) and cocoa growing 10.2% in the same period.

Agricultural land use accounts for more than 50% of all land use, and though decreasing, still provides employment for an estimated 60% of the population, particularly women (53% of whom are employed in agriculture). It is primarily small holder farming though it is important to note that certain crops such as cocoa have been intensively commercialized already for at least a century.

The cocoa sector in Ghana provides the primary livelihood to an estimated 800,000 farm household. Cocoa farming is one of the dominant land use activity in Ghana with an estimated cultivation area of over 1.6 million ha (World Bank 2012a). Cocoa farm sizes are relatively small with over 84% of the cocoa farms and 44% of the area falling in the size range of below 4 ha (Rice & Greenberg 2000).

Ghana is the second largest producer of cocoa in the world. In 2011, Ghana earned over US\$2.87 billion from cocoa export. The importance of the sector is reflected by the fact that the sector, including the Cocoa Board (COCOBOD), operate directly under the Ministry of Finance (MoF) rather than under the Ministry of Agriculture (MoFA). Overall production continues to grow rapidly, 15% per year 2001 – 2005, and accounted for 28% of the overall growth of the agricultural GDP.

Productivity in Ghana is among the lowest in the world with average yields of 330 kg per ha, compared to 580 kg in Ivory Coast and up to 770 kg in Indonesia. Production increase has come from expanding area under cultivation, which has also been a disincentive for improving productivity (World Bank 2011b). Thus the sector is a major contributor to deforestation and conversion to farming systems with continuously declining carbon stocks.

It is estimated that 25% of the cocoa tree stock exceed their 30 year maximum production life. A tree planting and rehabilitation program was launched in 2010 to replace old and infected trees. Focus in the first phase is on the Eastern, Brong Ahafo, Central and Volta regions. Insecure land tenure and insufficient access to affordable credit are some of the major constraints in the cocoa sector.

The organic cocoa and fair trade market is still small but growing rapidly (20% per year 2003 – 2008). In 2003 Ghana accounted for 45% of the market, and though South America currently is the leading producer region, there would be considerable opportunities for branding organic and fair trade cocoa in Ghana. The *Kuapa Kokoo* experience provides an arrangement, where the premium from the niche market is passed onwards to the *Kuapaa Kokoo* farmer association. Further, in late August 2012 the COCOBOD signed an agreement with private sector companies to ensure the traceability of UTZ Certified (UTZ Certified is a foundation for the worldwide implementation of a standard for responsible coffee, cocoa, tea and rooibos) cocoa beans in Ghana providing premiums which will be used by the communities for priority development projects. There have also been initiatives to introduce carbon payments for shaded cocoa, such as in the Ghana Cocoa Carbon Initiative by NCRC and the Forest Trends (Katoomba Group *et al.* 2011). Based on this experience there appears to be potential for more environmentally sustainable cocoa production based on market incentives or carbon payments.

Tree crops such as Oil Palm, Rubber Trees, Cashew etc. are envisaged to play an important role in agricultural development in Ghana (RoG 2011c). Especially the plans for and establishment of palm oil plantations has huge economic potential but are also the cause of major controversies in relation to clearing forests in West Africa (e.g. Liberia, Sierra Leone). The palm oil sector (300 – 350,000 ha) is largely small holder driven but may also become an area for large-scale investment and development in Ghana with current economic drivers persist, which potentially could impact on the HFZ.



## 6.0 SUSTAINABILITY ISSUES, ASSESSMENT AND ANALYSIS OF PROPOSED STRATEGY OPTIONS

### 6.1 Sustainability Issues

The REDD+ mechanism is aimed at reducing emissions from deforestation and forest degradation and ensuring sustainable management of forests, ensuring forest conservation, and enhancing carbon stocks. The FC has proposed some strategy options to address identified drivers of deforestation and forest degradation in the country. The successful implementation of these strategy options may be hindered by existing challenges in the forestry sector. The implementation of the strategy options may also result in some environmental and social impacts.

The SESA process was used to identify the likely environmental/social challenges or risks that need to be addressed to minimize adverse environmental/social impacts during project implementation and also to identify key issues that may arise as a result of the implementation of the strategy options. These challenges/risks initially identified during the consultation process, and confirmed through the spatial analysis and case study carried out have been discussed under the four pillars of sustainability recommended by the Ghana EPA, i.e. Natural Resources, Socio-cultural, Economic and Institutional issues and are presented below.

#### 6.1.1 *Natural Resource Issues*

- Protection of key river/ water bodies – develop buffer zones around key rivers into forest
- Soil and water quality concerns- from increasing agrochemical usage
- Soil fertility and farm erosion issues- promote agro forestry
- Resource wastage- during exploitation and use of timber
- Maintenance of young tree plantations- threats from livestock grazing especially during the dry seasons
- Lack of community/group woodlots, especially in the Savannah zones –promote community woodlots
- Promote tree crop plantations especially in the Transition and Savannah zones
- Encourage group/ individual and community woodlots especially in the Savannah areas
- Lack of community forests – promote community/stools forests/plantations
- Maintenance of forests, especially in the transition/savannah zones – threat from group hunters and alien herdsmen

#### 6.1.2 *Economic Issues*

- Equity issues- benefit sharing in carbon trading
- Limited financial resources- hampering effective forest management
- Lack of valuation rates for timber species- LVD compensation rates limited to only annual and perennial crops and LVD rates needs periodic review
- Limited economic/ livelihood activities- esp. during the dry season in the savannah zones putting pressure on forest resources
- Some communities rejecting REDD- Uncertainties associated with economic benefits
- Long gestation periods for tree species/ native tree species (farmers not interested)
- The economic viability and benefits from carbon trading versus tree trading
- Upfront demands for funds to carry out REDD+ activities & donor flexibility
- Job creation opportunities and long term revenues for beneficiaries

- Lack of policy on carbon rights and payment for ecosystem/environmental services
- High cost of LPG (pressure on other energy sources)
- Economically, women are generally dependent on men because the men have the dominant access to and use of the main factor of production, land.

### **6.1.3 Socio-cultural**

- Acquisition of large tracts of land for afforestation projects (peasant farmers at risk)
- Food security
- Admitted and illegal farms/ settlements in forest reserves- compatibility with forest conservation principles
- Compensation arrangements- increasing shade trees in existing cocoa farms
- Lack of royalty payments – from Game/ wildlife reserves/ parks and GSBA's to traditional authorities and landowners
- Lack of sustainable alternative livelihood schemes- Persons/ farmers/ communities heavily dependent on forest resources
- Women access and right to tenure and ownership of land and natural resources - Challenges due to cultural, traditional norms and customs
- Customary land acquisition and conflicts
- Communities rejecting REDD+ due to technicalities/complexities/uncertainties/ unmet expectations, previous projects completion issues
- Competition and demand for off-reserve lands (peasant farmers at risk)
- Women's multiple roles in the household, in production and reproduction limit their free time to engage effectively in other social and economic ventures/activities

### **6.1.4 Institutional**

- Weak law enforcement –inability of FC/FSD/government to halt illegal farming in FRs
- Conflicting policies -forestry, cocoa and mineral/mining sectors
- Tree tenure rights- reform law to enable tenant farmers benefit from naturally occurring trees on their farms during period of occupation
- Lack of policy on carbon rights and payment for ecosystem/environmental services
- Security of Land tenure and ownership
- Inadequate bye laws at district/ community level- Bush fires, group hunting and cutting of wild economic trees such as shea trees
- Institutional capacity for monitoring, data storage/management (FC)
- Off reserves management challenges- Community/ traditional authority role not clearly defined.
- Lack of land use plan for Ghana
- Change in government leading to change in policy direction
- Frequent adjournment of forest cases in court and low penalties for offenders
- Ineffective collaboration among key government institutions-e.g. FC/COCOBOD/MOFA /MC /MMDAs/GNFS etc
- Lack of Health and safety regulations in forest/plantation operation
- Lack of transparency at the institutional level during project implementation
- Misuse of power/conflict of interest by some traditional leaders and government officials in order to benefit from encroachment into FRs

## 6.2 Prioritization of Issues at the Regional Workshops

The sustainability issues identified were presented at the three regional workshops in Tamale, Kumasi and Takoradi for comments and prioritization. The prioritization (i.e. first five important issues) was done as part of the group work and was based upon consensus from group members. Each group made a presentation on its prioritized list for further discussion, comments and acceptance. The outcome of the prioritization is shown below.

**Table 6.1: First five prioritized issues from the regional workshops**

Natural Resources	Economic	Socio-cultural	Institutional
<b>Tamale Workshop</b>			
1. Promote tree crop plantation, especially in the Transition and Savanna zones 2. Soil fertility/farm erosion issues -promote agroforestry 3. Promote group/individual and community woodlots especially in the savanna zones 4. Develop buffer zones around key rivers/water bodies into forest 5. Livestock grazing on young tree plantations especially during the dry seasons	1. Equity in benefit sharing 2. Insufficient finance for forest Mgt 3. Lack of economic activities during dry season put pressure on forest resources 4. Risk of some communities rejecting REDD+ due to uncertainty with economic benefits 5. Farmers not interested in Long gestation tree species	1. Acquisition of large tracts of land for afforestation projects 2. Sustainable alternative livelihoods schemes for persons/farmers heavily dependent on forest resources 3. Food security implications from REDD+ 4. Admitted and illegal farms/settlements in Forest Resources not compatible with forest conservation principles 5. Women access and right to tenure and ownership of land and natural resources face major challenges due to cultural and traditional norms and customs	1 Weak law enforcement - Inability of FC/FSD and the government to halt illegal farms in FR 2 Conflicting policy for forestry, cocoa and mineral/ mining sectors 3 Lack of policy on carbon rights and payment for ecosystem/ environmental services 4 Inadequate bye laws at district/community level on bush fires, group hunting and cutting of wild economic trees such as shea nut tree 5 Community/ traditional authority roles in management of off-reserve forests not clearly defined
<b>Kumasi Workshop</b>			
1 Develop buffer zones around key rivers/water bodies into forest 2 Soil fertility/farm erosion issues -promote agro-forestry 3 Address waste in timber resource use 4 Promote tree crop plantation, especially in the Transition and Savanna zones 5 Promote group/individual and community woodlots especially in the savanna zones	1 Lack of economic/livelihood activity during the dry season in the savanna 2 Insufficient financial resources for effective forest management 3 Equity in benefit sharing in carbon trading 4 The economic viability and benefit s from carbon trading versus tree trading 5 Risk of communities rejecting REDD+	1. Acquisition of large tracts of land for afforestation projects 2. Food security issues 3. Sustainable alternative livelihood issues 4. Admitted and Illegal farms in forest reserves not compatible with forest conservation principles 5. Compensation arrangements – increasing shade trees in existing cocoa farms	1. Weak law enforcement - Inability of FC/FSD and the government to halt illegal farms in FR 2. Conflicting policy for forestry, cocoa and mineral/mining sectors 3. Security of Land tenure and ownership 4. Lack of policy on carbon rights and payment for ecosystem/environmental services 5. Tree tenure rights - Reform law to enable tenant farmers' benefit from naturally occurring trees on their farms

			during period of occupation.
<b>Takoradi Workshop</b>			
1. Promote tree crop plantation, especially in the Transition and Savanna zones 2. Develop buffer zones around key rivers/water bodies into forest 3. Soil fertility/farm erosion issues -promote agroforestry 4. Promote group/individual and community woodlots especially in the savanna zones 5. Address waste in timber resource use	1. Farmers not interested in long gestation tree species/native tree species 2. Risk of communities rejecting REDD+ 3. The economic viability and benefits from carbon trading versus tree trading 4. Equity in benefit sharing in carbon trading 5. Insufficient financial resources for effective forest management	1. Sustainable alternative livelihood schemes for persons/farmers heavily dependent on forest resources 2. Admitted and illegal farms/settlements in Forest Reserves not compatible with forest conservation principles. 3. Women access and right to tenure and ownership of land and natural resources face major challenge due to cultural and traditional norms and customs 4. Acquisition of large tracts of land for afforestation projects 5. Lack of royalty payment from game/wildlife reserves/parks to TAs/landowners	1. Weak law enforcement - Inability of FC/FSD and the government to halt illegal farms in FRs 2. Institutional capacity for monitoring, data storage /management 3. Security of Land tenure and ownership 4. Conflicting policy for forestry, cocoa and mineral/mining sectors 5. Tree tenure rights -Reform law to enable tenant farmers' benefit from naturally occurring trees on their farms during period of occupation.

### 6.3 Assessment of the Proposed Strategy Options

The assessment of the proposed strategy options was carried out using three of the Ghana SEA tools developed by the EPA and these include:

- Internal Consistency/Compatibility matrix;
- Compound matrix; and
- Opportunity and Risk matrix.

The Internal Consistency/Compatibility and Compound matrices were applied at the three regional workshops. The SESA consultants using information obtained from the field consultations as well as their knowledge and experiences carried out the Opportunity and Risk Matrix.

#### 6.3.1 Internal Consistency/Compatibility Matrix

The compatibility matrix is used to compare the way in which different policies, plans, programmes (PPPs) inter-react with each other. Sometimes PPPs are mutually supportive, but at other times they can work against each other, hence the need to assess their compatibility.

The aim of the compatibility matrix is to determine the degree to which the proposed REDD+ strategy options support or work against each other, i.e., how compatible they are. The compatibility matrix is created by:

- listing a set of REDD+ strategy options down the rows in the first column; and

- repeating these same strategy options/policies, plans and programmes across the columns in the top row as shown in **Table 6.2**.

Having created the matrix, a review group was established in all three regional workshops to review how the strategy options interact. These were discussed in the group to get a consensus of opinion and later presented to the larger forum to discuss and comment on the reasons for completing the compatibility matrix. The group reviewed the matrix by examining the interactions of strategy option 1 identified in the first column with each of the remaining strategy options numbered 2 upwards, appearing across the top of the matrix. The following criteria were used:

- Where two strategy options were mutually supportive with each other this was recorded by marking a ✓ in the relevant box.
- Where two strategy options had the potential to conflict with each other this was recorded by marking an X in the relevant box.
- If there is no significant interaction this was recorded by O.

A record sheet was used to record the basic reasons/issues that have been identified in the process of completing the Compatibility Matrix. The record sheet is helpful in communicating to people who have not been involved in the discussions, the reasons for indicating compatibility or not. Record sheets can also be used for checking revisions and refinements of strategy options/PPPs.

### **Outcome of the Compatibility Matrix**

From the three regional workshops, the various Groups that carried out the compatibility matrix generally confirmed that:

- The REDD+ strategy options were compatible with each other.
- In some cases, there is no significant interaction between the strategy options.
- In Tamale and Takoradi, there was no record of strategy options likely to work against each other or being incompatible.

However, in Kumasi, there was concern raised on the strategy options with regard to FLEGT and local timber market demand as likely to work against each other. The reasons being that:

- There are illegal logging/chain saw operations which is helping to meet the local market demand and therefore strict enforcement of the forestry law may create problems with local demand.
- It was recommended that if the law is reformed to help implement artisanal milling in order to provide legal timber to the local market, then the concerns will be addressed.

Details of the compatibility assessment from the workshops are provided in the Regional Workshop Report in **Annex 7**.



**Table 6.2:** Compatibility Matrix Template for REDD+ Strategy

No	REDD+ Strategies	Improve the quality of multi-stakeholder dialogue and decision making	Clarify right regime	Improve forest law enforcement, governance and trade	Address unsustainable timber harvesting by supporting sustainable supply of timber to meet export and domestic/regional timber demand	Address problem of local market supply	Mitigate effects of agricultural expansion (particularly cocoa in the HFZ)	Strengthened decentralised management of natural resources	Improve sustainability of fuel wood use	Improve quality of fire-affected forests and rangelands	Address local market demand	Improve returns to small scale enterprise	Improve regulation of mining activities to reduce forest degradation	Implement activities to address acts of God (wind and natural fire events, floods, pests and disease)
		1	2	3	4	5	6	7	8	9	10	11	12	13
1	Improve the quality of multi-stakeholder dialogue and decision making													
2	Clarify right regime													
3	Improve forest law enforcement, governance and trade													
4	Address unsustainable timber harvesting by supporting sustainable supply of timber to meet export and domestic/regional timber demand													
5	Address problem of local market supply													
6	Mitigate effects of agricultural expansion (particularly cocoa in the HFZ)													
7	Strengthened decentralised management of natural resources													
8	Improve sustainability of fuel wood use													
9	Improve quality of fire-affected forests and rangelands													
10	Address local market demand													
11	Improve returns to small scale enterprise													
12	Improve regulation of mining activities to reduce forest degradation													
13	Implement activities to address acts of God (wind and natural fire events, floods, pests and disease)													

### 6.3.2 Compound Matrix

The compound matrix is used, principally to evaluate individual REDD+ strategy options/PPPs against a range of environmental/social criteria or concerns. These criteria relate to the four pillars of sustainability:

- Natural resources
- Socio-cultural
- Economic, and
- Institutional issues

The way in which the strategy options interact with each criterion in the matrix is discussed by the review group and a view is taken as to whether or not the strategy option is likely to eliminate or address the environmental/social concern/effect or worsen it or be largely neutral. The following symbols were used to record the judgement as follows.

- Conditions are likely to be positive + and a colour code of green
- Conditions are likely to be negative - and a colour code of red
- Conditions are likely to be neutral o and a colour code of yellow
- Conditions are uncertain ?



A sample of the compound matrix form is provided in **Table 6.3**. In all the regional workshops, the range of environmental/social criteria or concerns used were the first five prioritized issues as provided earlier under Section 6.2.

#### Outcome of the Compound Matrix Evaluation

The evaluation of the strategy options against the prioritized issues under the four pillars of sustainability at the three regional workshops raised some key concerns with regard to the implementation of some strategy options likely to result in negative implications or conditions as indicated by the colour code of red from the outcome of the regional workshops as shown in **Table 6.4**. This implies adequate mitigation measures will be required during implementation to address concerns.

Details of the compound matrix evaluation from the regional workshops are provided in the Regional Workshop Report in **Annex 7**.

**Table 6.3: Compound Matrix for Analysis of REDD+ Strategies against Key Environmental Concerns**

Pillars of sustainability	Natural Resources					Socio-cultural					Economic					Institutional				
Strategy options /Major Environmental/Social Concerns																				
Improve the quality of multi-stakeholder dialogue and decision making																				
Clarify right regime																				
Improve forest law enforcement, governance and trade																				
Address unsustainable timber harvesting by supporting sustainable supply of timber to meet export and domestic/regional timber demand																				
Address problem of local market supply																				
Mitigate effects of agricultural expansion (particularly cocoa in the HFZ)																				
Strengthened decentralised management of natural resources																				
Improve sustainability of fuel wood use																				
Improve quality of fire-affected forests and rangelands																				
Address local market demand																				
Improve returns to small scale enterprise																				
Improve regulation of mining activities to reduce forest degradation																				
Implement activities to address acts of God (wind and natural fire events, floods, pests and disease)																				

NB: The five prioritized issues were put into the five columns for the four sustainability pillars (natural resources, economic, socio-cultural and institutional)

**Table 6.4: Major outcome of compound matrix evaluation from regional workshops**

No	REDD+ Strategy options / Key environmental/social issues	Livestock grazing on young tree plantations especially during the dry seasons	Food security implication	Acquisition of large tracts of land	Weak law enforcement- Admitted and illegal farms	The economic viability and benefit s from carbon trading versus tree trading	Communities rejecting REDD+ due to uncertainty with economic benefits	Lack of policy on carbon rights and payment for ecosystem/environmental services
1	Improve the quality of multi-stakeholder dialogue and decision making							
2	Clarify right regime		KR					
3	Improve forest law enforcement, governance and trade		TR KR					
4	Address unsustainable timber harvesting by supporting sustainable supple of timber to meet export and domestic/regional timber demand	TR	KR		KR		KR	
5	Address problem of local market supply	TR			KR			KR
6	Mitigate effects of agricultural expansion (particularly cocoa in the HFZ)	TR	TR	TR	TR, KR			
7	Strengthened decentralised management of natural resources							
8	Improve sustainability of fuel wood use	TR						KR
9	Improve quality of fire-affected forests and rangelands	TR						
10	Address local market demand	TR				KR		
11	Improve returns to small scale enterprise					KR	KR	
12	Improve regulation of mining activities to reduce forest degradation							
13	Implement activities to address acts of God (wind and natural fire events, floods, pests and disease)							

NB: TR = Indicated 'RED' at Tamale workshop

KR = indicated RED at Kumasi workshop

NB: The 'RED' colour indications imply adequate mitigation measures need to be put in place to avert any potential negative implication on the environmental/social criteria during the implementation of the respective strategy options.

### **6.3.3 Opportunity/Benefit and Risk Matrix for the REDD+ Strategy Options**

This matrix helps to assess the potential opportunities and risks associated with the proposed strategy options, so that remedial/ mitigation measures for the risks can be proposed and factored in the design of sub-components and implementation of the strategy options/interventions. The opportunities associated with or available during implementation of the strategy options can also be enhanced. The analysis was based on the following:

- Proposed strategy options/interventions;
- Potential opportunities (i.e. ongoing or recent past policies/plans/programmes in the forestry sector or other relevant sectors) that can be taken advantage of to improve or enhance the implementation of the proposed strategy options;
- Anticipated risks or challenges (external or internal) that could adversely impact on the strategy options during implementation. The outcome of the compatibility and compound matrixes were also considered for issues of potential negative/risk implications so that adequate mitigation measures are provided;
- Proposed enhancement measures/proposals for opportunities identified;
- Proposed mitigation measures/proposals for risks/ challenges identified; and
- Identified institutions to be responsible for implementing the proposals.

The opportunities/benefits and risk matrix with proposed enhancement/mitigation measures is provided in **Table 6.5**.



**Table 6.5: Opportunity/Benefit and Risk Matrix**

FC label	Strategy Option	Opportunities/Benefits and Risks	Proposed Enhancement/Mitigation Measures to guide implementation	Responsible Institution(s)
A	Improve the quality of multi-stakeholder dialogue and decision making	<b>Opportunities</b>	<b>Enhancement Measures</b>	
		<ul style="list-style-type: none"> <li>Diverse stakeholders from various sectors identified under VPA/R-PP/SESA REDD+</li> </ul>	<ul style="list-style-type: none"> <li>Ensure regular stakeholder engagement and engage experts to facilitate dialogue on policy and engagement.</li> </ul>	MLNR/FC
		<ul style="list-style-type: none"> <li>Diverse capacities available among stakeholders</li> </ul>	<ul style="list-style-type: none"> <li>Document capacities of stakeholder groups and strengthen capacity of stakeholders where necessary to deliver.</li> </ul>	
		<ul style="list-style-type: none"> <li>Existing policies/knowledge on natural resources climate change issues etc</li> </ul>	<ul style="list-style-type: none"> <li>Create systems for effective knowledge and information sharing among all stakeholders and platforms for reviews.</li> <li>Document emails/phone contacts and addresses of stakeholders.</li> </ul>	
		<ul style="list-style-type: none"> <li>Opportunity to engage high level political leaders /TAs across the divide (all political parties)</li> </ul>	<ul style="list-style-type: none"> <li>Create separate platform or forum for high level decision makers (e.g. political leaders across the divide and paramount chiefs)</li> </ul>	
		<ul style="list-style-type: none"> <li>VPA/R-PP/SESA stakeholder engagement experiences</li> </ul>	<ul style="list-style-type: none"> <li>Contact stakeholders (e.g. via emails, phone etc) involved for their opinions in ways of improving dialogue/decision making</li> </ul>	FC
		<b>Benefits</b>		
		<ul style="list-style-type: none"> <li>Increased knowledge and capacity for forest management</li> <li>Increased understanding and use of local &amp; traditional knowledge &amp; practices in forest management</li> <li>Increased participation / ownership by local communities and other stakeholders</li> <li>Environmental &amp; social awareness among various stakeholder groups</li> </ul>		
		<b>Risks</b>	<b>Mitigation Measures/Guidelines</b>	
		<ul style="list-style-type: none"> <li>Dominance of male decision makers that would prevent female participation and equity in dialogue and decision-making.</li> </ul>	<ul style="list-style-type: none"> <li>Diversify and include all genders (men, women, youth) in decision-making and outputs for equitable outcomes</li> </ul>	MLNR/FC
		<ul style="list-style-type: none"> <li>Gender roles and responsibility that poses reproductive roles (non-economic) on women and productive (economic) roles on men. It can affect women's availability for meetings.</li> </ul>	<ul style="list-style-type: none"> <li>Economic empowerment and livelihood support for all (men, women and youth).</li> <li>Consciously encourage and invite women (irrespective of their condition, e.g. pregnant, nursing mothers etc) to stakeholder meetings</li> </ul>	
		<ul style="list-style-type: none"> <li>Power dynamics that puts power and control of</li> </ul>	<ul style="list-style-type: none"> <li>Involve all (women, men and youth) in discussions (e.g.</li> </ul>	

FC label	Strategy Option	Opportunities/Benefits and Risks	Proposed Enhancement/Mitigation Measures to guide implementation	Responsible Institution(s)
		resources and decision making in the domain of men	especially at community levels) • Policy reviews and decision making should be gender responsive/in an equitable manner	
		• Cultural practices and traditional norms that prevent women from providing a voice and contributing to dialogue and decision-making on issues	• Address discriminatory and patriarchal challenges by promoting education and implantation of gender-balanced policies	
		• Inequity in knowledge management and information sharing	• Equitable distribution of information for the benefit of all by sharing equally among men and women and youth.	MLNR/FC
		• Minority/vulnerable groups left out (people with disability, migrants, settler farmers)	• Involve all groups in discussions especially at community levels and add their contributions to policy review document • Invitation letters/communication for community meetings should specifically identify and mention the minority/vulnerable groups as part of meeting.	
		• Inadequate and inconsistent information dissemination or sharing	• Timely and consistent information sharing /dissemination • Stakeholders to agree on how information and minutes of meeting should be disseminated and with given timelines.	
		• Politicization of issues and decisions	• Adopt non-partisan and all inclusive approach. • Identify and use non-political experts/NGOs/CSOs to lead discussions on politically sensitive issues.	FC/NGOs
		• High expectations of stakeholders from REDD+	• Educate all FC officials (especially FSD/WD staff in the districts and regions) to know what REDD+ is and what REDD+ is not. • Put in place a communication strategy for REDD+ (especially to guide all public/community and media engagements). • Ensure consistency in information sharing/delivery for all stakeholder groups. • Develop a mechanism (e.g. using district/regional FC staff) to obtain feedback from communities/farmers about their perception, understanding and expectations from REDD+. • Correct misinformation/ wrong perceptions from identified stakeholder groups without delay.	FC Climate Change Unit/ REDD+ Secretariat
B	Clarify Rights Regime	<b>Opportunities</b>	<b>Enhancement Measures</b>	
		• National Expert Consultation review on allocation of	• Factor equality and equity issues to benefit all (including people	

FC label	Strategy Option	Opportunities/Benefits and Risks	Proposed Enhancement/Mitigation Measures to guide implementation	Responsible Institution(s)	
		carbon rights	with disability, minorities and settler farmers)	MLNR/FC/Review Experts	
		• Availability of carbon markets	• -Sustain accessibility to carbon market • -Ensure transparency in carbon market transactions		
		• Monetary benefits (e.g. income) for stakeholders	• Benefit sharing mechanism to ensure realistic income /benefits to stakeholders		
		Benefits			
		• Improved law/legal framework for tree tenure • Improvement in equity to benefit-sharing • Improved rights & access to land / forests • Better access to Non Timber Forest Products (NTFP) by local communities • Increased understanding of the importance and benefits of ecosystem service function of forestry resources by local communities			
		Risks	Mitigation Measures/Guidelines		
		• Lack of a law on carbon rights and national institution in charge of carbon rights/markets	• Enact a law on carbon rights and designate an institution to be responsible for carbon right issues in the country	MLNR/FC/MoFA	
		• Low returns and price instability on carbon credits market	• Consider other profitable ventures for selling carbon and sharing of benefits for all • Develop a system to guarantee stable price and protect farmers against price instability (e.g. COCOBOD providing arrangement with cocoa farmers)	MLNR/FC	
		• Lack of regulation in international markets leading to prices dictated by market forces	• Need for developed countries to regulate carbon markets and guarantee future carbon markets/credits for developing countries • Develop local regulation/guidelines on carbon credits/markets and handling of price instability • Develop a system to guarantee stable price and protect farmers against price instability (e.g. COCOBOD arrangement with cocoa farmers)		

FC label	Strategy Option	Opportunities/Benefits and Risks	Proposed Enhancement/Mitigation Measures to guide implementation	Responsible Institution(s)
		<ul style="list-style-type: none"> <li>Women not benefitting from carbon credits and inequity and inequality in distributing of carbon benefits (e.g. in cases of co-ownership by spouses)</li> </ul>	<ul style="list-style-type: none"> <li>Benefit sharing arrangements /structure should make provision for women/gender desk/office</li> <li>Distribution of benefits at community levels should consider gender roles /responsibilities</li> <li>All stakeholders should benefit and their rights/roles clarified</li> <li>Address tree tenure rights and benefit sharing issues in tree tenure policy review</li> </ul>	
		<ul style="list-style-type: none"> <li>Women's challenges with land ownership and tree tenure rights</li> </ul>	<ul style="list-style-type: none"> <li>Address this through tree tenure policy review</li> <li>Sensitize TAs/landowners on relevant constitutional provisions and laws</li> </ul>	FC/OASL/TAs
		<ul style="list-style-type: none"> <li>Lack of transparency and explicitness at institutional level</li> </ul>	<ul style="list-style-type: none"> <li>Clarify who qualifies for benefits through education and dialogue</li> </ul>	FC
		<ul style="list-style-type: none"> <li>Traditional inheritance laws may prevent equitable benefit sharing of carbon credits and benefits</li> </ul>	<ul style="list-style-type: none"> <li>Address cultural and traditional gender discrimination through education and sensitization</li> <li>Rules of engagement under REDD+ should clearly indicate gender concerns at all levels</li> </ul>	FC/TAs
		<ul style="list-style-type: none"> <li>Lack of economic empowerment and sustainable alternate livelihood actions for women</li> </ul>	<ul style="list-style-type: none"> <li>Promote livelihood and economic empowerment in policy regulation and benefit sharing rights</li> </ul>	FC/DAs
C	Improve forest law enforcement, governance and trade	<b>Opportunities</b>	<b>Enhancement Measures</b>	
		<ul style="list-style-type: none"> <li>Existence of forest laws/policies and management institutions and structures</li> <li>Existence of VPA/NREG and other ongoing programmes and their linkages to REDD+</li> </ul>	<ul style="list-style-type: none"> <li>Strengthen institutions to be able to enforce law in equitable and non-discriminatory manner</li> <li>Ensure adequate human resources and equipment especially at the reserve/district level for effective monitoring</li> <li>Learn lessons from both ongoing and executed programmes to improve REDD+ activities</li> <li>Strengthen institutions and motivate personnel to implement ongoing programmes successfully</li> <li>Clarify linkages of ongoing forest programmes to REDD+ for all institutions/personnel involved to provide more avenues for addressing forest degradation/ deforestation</li> </ul>	MLNR/FC

FC label	Strategy Option	Opportunities/Benefits and Risks	Proposed Enhancement/Mitigation Measures to guide implementation	Responsible Institution(s)
		<ul style="list-style-type: none"> <li>Existence of community forest management avenues, e.g. CREMAs, CFCs. CREMAs are good avenues to be used as the concept is more appealing to communities.</li> </ul>	<ul style="list-style-type: none"> <li>Promote and encourage CREMAs</li> <li>Restructure Collaborative Forest Committee (CFC) to follow that of CREMAs structure to make it function more effectively</li> </ul>	
		<b>Benefits</b>		
		<ul style="list-style-type: none"> <li>Improved forest governance</li> <li>Strengthened institutions (i.e. involved with forest management and governance)</li> <li>Motivated personnel/FC staff (i.e. involved with forest management and governance)</li> <li>Reduced illegal activities</li> <li>Reduced conflict and insecurity</li> <li>Reduced deforestation and forest degradation</li> <li>Reduction in loss of biodiversity</li> </ul>		
		<b>Risks</b>	<b>Mitigation Measures/Guidelines</b>	
		<ul style="list-style-type: none"> <li>Gender considerations not likely to be included in policy reviews</li> </ul>	<ul style="list-style-type: none"> <li>Mainstream gender issues during policy reviews and strengthen equitable policy implementation /regulation.</li> </ul>	MLNR/FC
		<ul style="list-style-type: none"> <li>Lack of equitable participation of all genders in decision-making and forest governance</li> </ul>	<ul style="list-style-type: none"> <li>Promote more female participation in forest governance process.</li> </ul>	
		<ul style="list-style-type: none"> <li>Traditional assigned gender roles preventing participation of all in governance and trade</li> </ul>	<ul style="list-style-type: none"> <li>Consciously promote more female participation in forest governance</li> <li>Conduct strategic needs assessments to inform economic empowerment programmes for women</li> </ul>	
		<ul style="list-style-type: none"> <li>Lack of adequate female staff in law enforcement and governance</li> </ul>	<ul style="list-style-type: none"> <li>Promote female interest in forestry management to address inequity and gaps.</li> <li>Give equal opportunity to both male/female during employment and selection of candidates for both field and office assignments</li> </ul>	
		<ul style="list-style-type: none"> <li>Lack of institutional will for inclusion and diversity in governance and forest management</li> </ul>	<ul style="list-style-type: none"> <li>Address presumptions of compassion for female staff and gender roles preventing female inclusion in governance processes</li> <li>Educate regional/ district FC officials on gender issues and not to discriminate during selection of potential candidates for employment consideration.</li> </ul>	

FC label	Strategy Option	Opportunities/Benefits and Risks	Proposed Enhancement/Mitigation Measures to guide implementation	Responsible Institution(s)
		<ul style="list-style-type: none"> <li>Safety and security of community informants/whistle blowers not guaranteed</li> </ul>	<ul style="list-style-type: none"> <li>Educate FC officials and security personnel on the need to protect whistle blowers identity at all cost</li> <li>Key informants should be rewarded for their efforts</li> </ul>	Security agencies/FC
		<ul style="list-style-type: none"> <li>Inadequate protection and safety measures for field officers (especially forest guards and range supervisors)</li> </ul>	<ul style="list-style-type: none"> <li>Develop and implement safety and security policy for FC field staff</li> <li>Provide adequate PPEs, field communication gadgets and means of transport (e.g. motorbikes, 4x4 country vehicles etc for FC field staff)</li> <li>Forest guards should be made to work in pairs in the forests</li> <li>Train and arm FSD forest guards/ range supervisors like their counterparts at the WD</li> </ul>	MLNR/FC
		<ul style="list-style-type: none"> <li>Inadequate motivation for FC staff</li> </ul>	<ul style="list-style-type: none"> <li>Improve salaries/wages and allowances of FC staff (e.g. to be comparable with other government institutions in charge of natural resources)</li> <li>Clarify and streamline staff promotional issues</li> <li>Provide adequate logistics/support for effective field monitoring (e.g. 4x4 vehicles, motorbikes, PPEs etc)</li> </ul>	MLNR/FC
		<ul style="list-style-type: none"> <li>Prolong litigation and low fines/court penalties not deterrent</li> </ul>	<ul style="list-style-type: none"> <li>Review ADR Act 798, 2010 to include environmental matters in scope of application</li> <li>Review penalties for forest law offences/court penalties</li> <li>Collaborate with the Judiciary to establish or set up environmental courts</li> <li>Improve capacity of FC regional/district staff in prosecution skills</li> <li>Periodically sensitize the judiciary on environmental /natural resource issues and climate change concerns</li> </ul>	Ministry of Justice & Attorney General/MESTI MLNR/FC
D & E/J	Address unsustainable timber harvesting by supporting sustainable supply of timber to meet export	<b>Opportunities</b>	<b>Enhancement Measures</b>	
		<ul style="list-style-type: none"> <li>Existence of forest management plans and operational manuals</li> </ul>	<ul style="list-style-type: none"> <li>Strictly adhere to forest management plans and operational manuals</li> </ul>	MLNR, FC
		<ul style="list-style-type: none"> <li>Ongoing national tree plantation programmes</li> </ul>	<ul style="list-style-type: none"> <li>Learn lessons from programme to improve REDD+ activities</li> <li>Ensure timely supply of tree seedlings for plantations to take advantage of rainy seasons to guarantee tree survival.</li> <li>Individuals or firms involved in tree seedling nursery and supply</li> </ul>	MLNR, FC



FC label	Strategy Option	Opportunities/Benefits and Risks	Proposed Enhancement/Mitigation Measures to guide implementation	Responsible Institution(s)
	and domestic/ regional timber demand  (Address problems of local market demand and supply)		<p>should be involved at the early stages so that they can plan to raise and supply seedlings in good time for the tree plantation programme.</p> <ul style="list-style-type: none"> <li>The FC/FSD should be party (be made to also sign) to the contract MLNR gives to private firms to carry out tree plantation activities so that supervision can be effective (private firms will respect the authority of FC/FSD in the regions and district).</li> <li>Private firms involved with tree plantations should not be completely paid at the end of work until they have settled all community labour that were used or engaged.</li> </ul>	
		<ul style="list-style-type: none"> <li>FIP activities to be implemented soon</li> </ul>	<ul style="list-style-type: none"> <li>Learn lessons from programme to improve REDD+ activities</li> <li>Implement FIP activities (e.g. tree plantations, rehabilitation of forest reserves) successfully to reassure REDD+ success</li> </ul>	
		<ul style="list-style-type: none"> <li>National Expert Consultation on Timber Supply</li> </ul>	<ul style="list-style-type: none"> <li>Include all stakeholders in the consultations in an equitable manner</li> </ul>	
		<ul style="list-style-type: none"> <li>Ongoing tree tenure reforms</li> </ul>	<ul style="list-style-type: none"> <li>Benefit sharing should include farmers</li> </ul>	
		<ul style="list-style-type: none"> <li>Ecosystem friendly/climate smart cocoa interventions by NGOs/CSO</li> </ul>	<ul style="list-style-type: none"> <li>Tap on NGO/CSO experiences in improving or ensuring maintenance of shade trees in cocoa farms.</li> <li>As much as possible use such NGOs/CSOs to carry out REDD+ activities on the ground</li> </ul>	FC/NGOs
		<ul style="list-style-type: none"> <li>FORIG/ Research institutions/Universities studies and research works. Adequate local capacities and experience/knowledge base</li> </ul>	<ul style="list-style-type: none"> <li>Contact institutions for use findings for al-inclusive interventions.</li> <li>Improve cooperation with research institutions/ universities and create avenues for research institutions to make presentations to FC on research findings.</li> <li>Tap on the capacity and experience of research institutions</li> </ul>	FC/FORIG/ Universities
		<ul style="list-style-type: none"> <li>Implementation of ongoing VPA/FLEGT arrangement</li> </ul>	<ul style="list-style-type: none"> <li>Maintain links to VPA process and integrate actions as appropriate</li> </ul>	MLNR/FC
		<ul style="list-style-type: none"> <li>Existence of lesser known timber species and non-wood alternatives (e.g. metals, plastics)</li> <li>Availability of timber off-cuts, sawn-mill by-products</li> </ul>	<ul style="list-style-type: none"> <li>Create awareness and promote the use of less known timber species and non-wood alternatives</li> <li>-Grant permits for collection of off-cuts and supervise implementation</li> </ul>	MLNR, FC, MOTI FC, GTA, GTMO, artisanal millers/

FC label	Strategy Option	Opportunities/Benefits and Risks	Proposed Enhancement/Mitigation Measures to guide implementation	Responsible Institution(s)
			<ul style="list-style-type: none"> <li>-Promote the use of sawn-mill by-products (as alternative fuels, e.g. for briquettes)</li> </ul>	
		<b>Benefits</b> <ul style="list-style-type: none"> <li>• Reduced illegal logging</li> <li>• Reduction in the creation of illegal access routes into forest reserves</li> <li>• Reduced conflict</li> <li>• Strengthened institutions and motivated FC staff</li> <li>• Reduced corruption and bribery among FC staff</li> <li>• Safety and security of FC staff assured</li> <li>• Reduced deforestation and forest degradation</li> <li>• Reduction in loss of biodiversity</li> <li>• Improvement in the sustainable management of forest resources</li> <li>• Improved use of timber resources</li> <li>• Improved benefit sharing</li> <li>• Investment in alternative livelihoods</li> </ul>		
		<b>Risks</b>	<b>Mitigation Measures/Guidelines</b>	
		<ul style="list-style-type: none"> <li>• Underestimation of women involvement in timber supply industry</li> </ul>	<ul style="list-style-type: none"> <li>• Inclusion and diversity in the process to forestall deforestation and unsustainable timber supply</li> <li>• Carry out a study to unravel gender roles in the timber supply industry to provide relevant information for mitigation</li> </ul>	FC/MMDAs
		<ul style="list-style-type: none"> <li>• Access to land for tree plantation is a challenge, especially for women</li> </ul>	<ul style="list-style-type: none"> <li>• Assistance to disadvantaged persons (mostly migrant farmers, women) to access land for tree plantations</li> <li>• Sensitize TAs to release land for women groups for tree plantation projects</li> </ul>	FC/TAs
		<ul style="list-style-type: none"> <li>• Acquisition of large tracts of land by private firms/ land grabbing for tree plantation development</li> </ul>	<ul style="list-style-type: none"> <li>• A multi-stakeholder forum to agree on a ceiling for land acquired by private firms/ individuals for tree plantations in a given district</li> <li>• Adequate compensation arrangements for acquired lands</li> <li>• Discourage conversion of large tracts of farmlands into afforestation/plantation projects</li> <li>• A percentage of a specified tree plantation acreage (to be determined by a multi-stakeholder forum) should be put under food production</li> </ul>	MoFA/MLNR/FC /MMDAs/TAs

FC label	Strategy Option	Opportunities/Benefits and Risks	Proposed Enhancement/Mitigation Measures to guide implementation	Responsible Institution(s)
			<ul style="list-style-type: none"> <li>Enhance food security through improved farmland production to reduce forest pressures</li> <li>Employment opportunities on plantations to be given to local communities first as much as possible. All casual and temporary labour should be given to local communities</li> <li>Encourage the use of marginal/degraded lands for tree plantation development</li> <li>-Expedite work on the land use and spatial planning bill</li> <li>Social impact assessment should be prepared for land acquired for tree plantations in excess of 40ha</li> <li>Sensitize the TAs to consult or engage MMDAs on land use plans for the district before selling large tracts of land to investors for tree plantation programmes</li> </ul>	
		<ul style="list-style-type: none"> <li>Biodiversity threats under tree plantations (-Mono specific exotic tree plantings may alter natural vegetation; -Plantation tree seedlings may invade adjacent forest -Biodiversity conservation (changes in flora and fauna) -Uniform age as clear felling may prevent succession processes)</li> </ul>	<ul style="list-style-type: none"> <li>Design planting to include both exotic and indigenous plants in the right proportions and positions.</li> <li>Avoid environmentally sensitive sites and unnecessary exposure or access to sensitive habitat; Consult EPA in the selection and use of such sites.</li> <li>Consider biodiversity plots within tree plantations and also along waterways and streams within the plantations.</li> <li>Clearance of plantation plots will be sufficiently phased to reduce the impacts of vegetation removal on terrestrial flora and fauna.</li> </ul>	MLNR, FC, private firms into tree plantations
		<ul style="list-style-type: none"> <li>Threats to Cultural Heritage sites under tree plantation activities (-Limited access to shrines -Preservation of local cultural identity and heritage -Compensation issues -Community pride and support -Community relinquishing/ sharing heritage for greater good)</li> </ul>	<ul style="list-style-type: none"> <li>Any cultural site including sacred groves on proposed plantations will, with the agreement of the community be well demarcated and the area not cleared for development.</li> <li>Necessary cultural rites agreed with community and performed prior to access to groves</li> <li>No cultural heritage site should be relocated</li> <li>Community to be given access to cultural sites</li> </ul>	
		<ul style="list-style-type: none"> <li><i>Abuse of Pesticides usage under tree plantations</i> -improper application of pesticide amounts</li> </ul>	<ul style="list-style-type: none"> <li>Pesticide management plans to be developed for plantations</li> </ul>	

FC label	Strategy Option	Opportunities/Benefits and Risks	Proposed Enhancement/Mitigation Measures to guide implementation	Responsible Institution(s)
		<ul style="list-style-type: none"> <li>-application in rainy season resulting in ineffective targeting and increased runoff and uptake by soils and water bodies</li> <li>-use of highly toxic chemicals to plants, animals and humans</li> <li>-improper use, contamination by high exposure, no precautionary measures</li> </ul>	<ul style="list-style-type: none"> <li>• The main control methods for pests and diseases will involve the use of resistant hybrids, trapping/scaring of animals, protecting young plants with collar wire and destroying nestling/breeding areas of pests.</li> <li>• A constant phyto-sanitary observation to be maintained to help prevent the outbreak and spread of any potential disease/pest into the whole plantation.</li> <li>• Uncontrolled mass spraying of fungicides to be avoided.</li> <li>• Control of weeds to be done manually and use of herbicides to be minimized</li> </ul>	
		<ul style="list-style-type: none"> <li>• Conflicting and overlapping policies of agriculture, food security, forestry, mining sectors</li> </ul>	<ul style="list-style-type: none"> <li>• Expedite work on the land use and spatial planning bill</li> <li>• Inter-sectoral collaboration to streamline implementation to provide clear-cut guidelines for land use in these sectors</li> <li>• Review policy of mining in production forest reserves</li> <li>• Review practice of relocating alien herdsmen from farmlands into forest reserves</li> </ul>	MLNR/MoFA/MESTI
		<ul style="list-style-type: none"> <li>• Lack of sustainable alternative livelihood schemes for artisanal lumber operators/traders and illegal chain saw operators</li> </ul>	<ul style="list-style-type: none"> <li>• Develop sustainable alternative livelihood programme for chain saw operators.</li> <li>• Support artisanal lumber operators/traders with micro-credit for livelihood activities for income generation.</li> <li>• Support artisanal lumber /illegal chain saw operators to go into tree plantation projects</li> <li>• Reform law to implement artisanal milling in the country</li> <li>• Train artisanal/illegal loggers into production and distribution of improved cook-stoves/fuels for carbon credits</li> </ul>	MOFA, FC, MMDAs Ghana Alliance for Clean Cook-stoves, Energy Commission
		<ul style="list-style-type: none"> <li>• Lack of sustainable alternative livelihood for farmers (both male &amp; female) in lean farming season/dry seasons</li> </ul>	<ul style="list-style-type: none"> <li>• Train and support farmers in sustainable alternative livelihood skills, especially small scale enterprises –e.g. soap making, tie/dye making, bee keeping</li> <li>• Provide linkages to markets to improve returns to small scale enterprises</li> <li>• Train and support female farmers in alternative skills such as sewing/tailoring/dress making</li> <li>• Develop and promote small dams for dry season irrigation</li> </ul>	FC, MoFA, MMDAs

FC label	Strategy Option	Opportunities/Benefits and Risks	Proposed Enhancement/Mitigation Measures to guide implementation	Responsible Institution(s)
			farming in the savanna zones • Promote community/individual woodlot development for commercial purposes in the savanna zones	
		• Weak law enforcement	• -Improve law enforcement through effective collaboration with security agencies • -Strengthen capacity of FC field staff and provide adequate resources (staff, equipment, funds, etc) for effective enforcement and monitoring • Sensitize Judiciary on importance of forests, climate change and other environmental issues • Review law on forest offences and review fines upwards	MLNR, FC, Security agencies, Judiciary
		• Lack of legal framework for artisanal milling	• Develop legal framework for artisanal milling	MLNR/FC
		• Ineffective collaboration between law enforcement agencies and FC	• Improve collaboration among stakeholders	CEPS, Police and FC
		• Declining timber resources	• Consider importation option for timber • Engage in stock improvement through enrichment planting • Improve rehabilitation of degraded forest (e.g. through modified taungya system)	MLNR, FC
		• Exceeding annual allowable cut	• Improve monitoring • Strengthen cooperation with GTA/GTMO	FC, GTA, GTMO
		• Connivance of forestry officials with loggers to carry out illegal activities that exacerbate deforestation/degradation	• Strict enforcement of laws and severe punishment /sanctions of offenders • Improve motivation for FC field staff	MLNR/FC
		• Lack of tree ownership and benefit sharing arrangement for farmers	• Reform tree tenure and clarify beneficiary rights in an equitable manner	MLNR/FC
		• Competing demands for land for plantation development and other land use options (e.g. farms, food production, settlements)	• -Encourage the use of marginal/degraded lands for tree plantation development. (Free fertile lands for food production) • -Expedite work on the land use and spatial planning bill	MLNR
		• Low awareness of existence of improved cookstoves and alternative fuels (bamboo briquettes, bamboo charcoal, biofuel/biogas)	• -Education and provision of improved cook-stoves and fuels for the benefit of all.	FC/ Energy commission
F/K		<b>Opportunities</b>	<b>Enhancement Measures</b>	

FC label	Strategy Option	Opportunities/Benefits and Risks	Proposed Enhancement/Mitigation Measures to guide implementation	Responsible Institution(s)
	Mitigate effects of agricultural expansion (particularly cocoa in the HFZ)	<ul style="list-style-type: none"> <li>Working group on REDD+ -friendly cocoa production and low carbon agro industrial development</li> </ul>	<ul style="list-style-type: none"> <li>Tap on the experiences and knowledge of committee members for REDD+ friendly cocoa activities</li> </ul>	MLNR, FC, NGOs, COCOBOD
		<ul style="list-style-type: none"> <li>Ongoing ecosystem friendly/climate smart cocoa/agriculture interventions by NGOs/CSOs (e.g. Rainforest Alliance, Solidaridad etc)</li> </ul>	<ul style="list-style-type: none"> <li>Tap on the experiences of NGOs/CSOs and learn lessons from their activities to improve REDD+ activities</li> <li>Use experienced NGOs/CSOs already undertaking similar activities to implement ground activities under REDD+</li> </ul>	NGOs/CSOs
		<ul style="list-style-type: none"> <li>Existing collaboration between FC and COCOBOD/ CRIG under ER-PIN</li> </ul>	<ul style="list-style-type: none"> <li>Improve collaboration and clarify terms of collaboration including budget and compensation issues for members involved</li> </ul>	MLNR, FC, COCOBOD/CRIG
		<ul style="list-style-type: none"> <li>REDD+ gender roadmap/component and gender desk</li> </ul>	<ul style="list-style-type: none"> <li>Implement gender strategy equitably</li> </ul>	FC, NGOs
		<ul style="list-style-type: none"> <li>Ongoing promotion of shade cocoa, CODAPEC/ cocoa high-tech (spraying and fertilizer application), rehabilitation of moribund cocoa farms by COCOBOD</li> </ul>	<ul style="list-style-type: none"> <li>Improve security of land tenure for cocoa farmers</li> <li>Remove all forms of politicization and other constraints (availability of agro-chemicals -e.g. agro-chemicals labelled not for sale are being sold)</li> </ul>	FC, MoFEP /COCOBOD
		<ul style="list-style-type: none"> <li>National REDD+ Pilot Projects under R-PP</li> </ul>	<ul style="list-style-type: none"> <li>Implement pilot projects to facilitate learning to enhance and improve national REDD+ programme</li> </ul>	FC-CCU/REDD+ Secretariat
		<ul style="list-style-type: none"> <li>Ongoing Land Administrative Project (LAP) under MLNR</li> </ul>	<ul style="list-style-type: none"> <li>Ensure successful and timely completion of LAP activities especially with regard to land tenure and legislative reforms in aspects of land use</li> </ul>	MLNR
		<ul style="list-style-type: none"> <li>Existing MoFA programmes,(e.g. FASDEP) on productivity of farmlands and food security</li> </ul>	<ul style="list-style-type: none"> <li>Improve collaboration with MoFA extension service</li> <li>Training in best agronomic practices</li> <li>Timely provision of inputs to farmers</li> </ul>	FC, MoFA
		<b>Benefits</b>		
		<ul style="list-style-type: none"> <li>Improved tree cover in cocoa farms</li> <li>Improved cocoa yield and income of cocoa farmers</li> <li>Reduced expansion of cocoa farms in forests reserves</li> <li>Reduced conversion of natural forest into cocoa farms (i.e. reduced deforestation and forest degradation)</li> <li>Reduced loss in biodiversity</li> <li>Legal framework on tree tenure established</li> <li>Better understanding of cocoa farmers on ecosystem /environmental service function of shade trees</li> <li>Improved benefit sharing to land owners and cocoa farmers</li> <li>Desire of landowners/traditional authorities to give out forested lands for cocoa farming reduced due to improved benefit sharing</li> </ul>		



FC label	Strategy Option	Opportunities/Benefits and Risks	Proposed Enhancement/Mitigation Measures to guide implementation	Responsible Institution(s)
		<ul style="list-style-type: none"> <li>Reduced conflict and insecurity</li> <li>Investment in landscape land use planning</li> </ul>		
		<b>Risks</b>	<b>Mitigation Measures/Guidelines</b>	
		<ul style="list-style-type: none"> <li>Persistent presence of admitted and illegal farms/settlements in Forest Reserves</li> </ul>	<ul style="list-style-type: none"> <li>Review policy on admitted farms/settlements to allow for gradual and planned relocation of farms/settlements out of FRs over an agreed period with stakeholders</li> <li>Enforce forest laws with regard to illegal farms in FRs</li> <li>Collaborate with MoFA, COCOBOD and MMDAs</li> <li>Sensitize political leaders at the district/regions on impact of illegal farms/settlements on FRs and climate change in general</li> </ul>	MLNR, FC, MoFEP, MoFA, MMDAs
		<ul style="list-style-type: none"> <li>Resistance from farmers to mitigation efforts</li> </ul>	<ul style="list-style-type: none"> <li>Strengthen law enforcement agencies with proper remuneration and equipment</li> <li>Regularly engage and sensitize farmers on climate change issues its short/long term impact on their farming activities</li> </ul>	MLNR, FC, NGOs, Farmer based organizations (FBOs)
		<ul style="list-style-type: none"> <li>Poorly demarcated forest reserve boundaries</li> </ul>	<ul style="list-style-type: none"> <li>-Improve and monitor boundary demarcation</li> <li>-Community education and sensitization</li> <li>-Incentivizing local communities to assist with boundary clearing</li> </ul>	MLNR, FC, Forest fringe communities
		<ul style="list-style-type: none"> <li>Discrimination in provision of services to farmers (cocoa spraying, fertilizers etc)</li> </ul>	<ul style="list-style-type: none"> <li>Equitable provision of services</li> </ul>	COCOBOD, MMDAs
		<ul style="list-style-type: none"> <li>Lack of sustainable alternative livelihood for farmers (both male/female)</li> </ul>	<ul style="list-style-type: none"> <li>Develop and implement an alternative livelihood policy/programme for forest dependent communities</li> <li>Improve alternative livelihood skills training for farmers (both men and women) and inputs</li> <li>Provide linkages to markets to improve returns to small scale enterprises/alternative livelihood support projects</li> <li>Local government authorities to ensure coordination in alternative livelihood programmes within their jurisdiction</li> <li>Train and support female farmers in alternative skills such as sewing/tailoring/dress making and trading opportunities</li> </ul>	MLNR/FC/MoFA /MMDAs
		<ul style="list-style-type: none"> <li>Improper and discriminatory benefit sharing, land ownership and tree tenure rules</li> </ul>	<ul style="list-style-type: none"> <li>Improve policy implementation and law enforcement in an equitable manner</li> <li>Implement tree tenure reforms under plantation policy</li> </ul>	FC/MLNR

FC label	Strategy Option	Opportunities/Benefits and Risks	Proposed Enhancement/Mitigation Measures to guide implementation	Responsible Institution(s)
			<ul style="list-style-type: none"> <li>Reform benefit sharing arrangement for naturally occurring trees on cocoa farms to include farmers</li> <li>Improve security of land tenure for cocoa farmers</li> <li>Promote payment for ecosystem services for GSBAs, national wildlife parks/game reserves</li> </ul>	
		<ul style="list-style-type: none"> <li>Land documentation and lease acquisition challenges for lands/farmlands acquired by settler/migrant farmers through customary means</li> </ul>	<ul style="list-style-type: none"> <li>Collaborate and support the LAP/OASL initiative to address this challenge</li> <li>Engage and sensitize TAs/ landowners /farmers on relevant constitutional provisions and laws</li> <li>Provide assistance to settler/migrant farmers to be able to acquire proper land documents (e.g. site plans, indenture/ land agreements etc)</li> </ul>	MLNR, OASL, TAs, FC
		<ul style="list-style-type: none"> <li>Land tenure, conflicts and disputes</li> </ul>	<ul style="list-style-type: none"> <li>MLNR/LAP should expedite work on the customary land demarcation project.</li> <li>Provide assistance to settler/migrant farmers to be able to acquire proper land documents (e.g. site plans, indenture/ land agreements etc).</li> <li>MLNR through stakeholder engagement should develop a policy to ban or discourage verbal arrangements for leasing or giving out land to settler/migrant farmers especially for perennial plant/tree crop farming purposes.</li> </ul>	
		<ul style="list-style-type: none"> <li>Women's limited ownership and access to land due to traditional and customary laws</li> </ul>	<ul style="list-style-type: none"> <li>Address issues of land ownership in equitable manner</li> <li>Expedite work on new intestate succession bill</li> <li>REDD+ should clarify gender issues as part of rules of engagement</li> </ul>	
		<ul style="list-style-type: none"> <li>Inadequate land for farms, economic trees and tree plantations</li> </ul>	<ul style="list-style-type: none"> <li>Promote intensive use of land (soil enrichment, agroforestry)</li> <li>Identify and rehabilitate degraded lands for useful purposes</li> </ul>	MLNR, MoFA, FC
		<ul style="list-style-type: none"> <li>Over reliance on agro-chemicals and impact on water and soil resources (surface water pollution/effect on soil fertility)</li> </ul>	<ul style="list-style-type: none"> <li>Adopt best agronomic practices</li> <li>Develop Pest and Pesticide Management Plan for REDD+</li> <li>Promote use of organic fertilisers</li> <li>Educate farmers on the proper application and handling of agro-chemical fertilisers /pesticides</li> </ul>	MoFA/PPRSD, WRC, FC

FC label	Strategy Option	Opportunities/Benefits and Risks	Proposed Enhancement/Mitigation Measures to guide implementation	Responsible Institution(s)
			<ul style="list-style-type: none"> <li>• Maintain buffer zones around water bodies and monitor water quality</li> <li>• Maintain a constant phyto-sanitary observation to help prevent the outbreak and spread of any potential disease/pest</li> </ul>	
G	Strengthen local decentralised management of natural resources	<b>Opportunities</b>	<b>Enhancement Measures</b>	
		<ul style="list-style-type: none"> <li>• Existing links to Natural Resource and Environmental Governance (NREG) strategy and GPRSII/Ghana's development agenda</li> </ul>	<ul style="list-style-type: none"> <li>• -Strengthen links in an all-inclusive manner</li> </ul>	MLNR, FC
		<ul style="list-style-type: none"> <li>• Existing relationship between decentralised departments and agencies (OASL, MOFA, DAs, NGOs, etc.) and FC</li> </ul>	<ul style="list-style-type: none"> <li>• -Intensify engagement and clarification of efforts to avoid duplication</li> <li>• -Information sharing and creation of platform for joint monitoring of resources</li> </ul>	OASL, MOFA, DAs, NGOs, and FC
		<ul style="list-style-type: none"> <li>• Existence of informal arrangement or agreement (between FC and TAs/community) for accessing and harvesting of NTFPs</li> </ul>	<ul style="list-style-type: none"> <li>• Increase community awareness/education on conservation of natural resources</li> <li>• Clarify and formalize rules/guidelines for accessing and harvesting of NTFPs</li> </ul>	MLNR, FC, TAs, MMDAs
		<b>Benefits</b>		
		<ul style="list-style-type: none"> <li>• Strengthened local organisations in forest management</li> <li>• Increased understanding and use of local &amp; traditional knowledge &amp; practices in forest management</li> <li>• Increased participation / ownership by local communities and traditional authorities</li> <li>• Better understanding of ecosystem service function of forests by local communities</li> <li>• Reduced deforestation and forest degradation</li> <li>• Improved benefit sharing</li> <li>• Improved rights and access to forest resources/NTFP</li> </ul>		
		<b>Risks</b>	<b>Mitigation Measures/Guidelines</b>	
		<ul style="list-style-type: none"> <li>• Inadequate capacity at the decentralized level</li> </ul>	<ul style="list-style-type: none"> <li>• Improve training in natural resource management at decentralised level</li> </ul>	MLNR, FC, FORIG
		<ul style="list-style-type: none"> <li>• Limited inclusion of women in management of natural resources</li> </ul>	<ul style="list-style-type: none"> <li>• Create and strengthen gender desks at decentralised levels (to enhance full participation in decision making/contribute to the process of legislation review)</li> </ul>	MLNR, FC
		<ul style="list-style-type: none"> <li>• Traditional norms dictating roles and responsibilities</li> </ul>	<ul style="list-style-type: none"> <li>• Training in forest and resource management should emphasize</li> </ul>	

FC label	Strategy Option	Opportunities/Benefits and Risks	Proposed Enhancement/Mitigation Measures to guide implementation	Responsible Institution(s)	
		of males and females in favour of males	on inclusion of both males and females <ul style="list-style-type: none"><li>Education of TAs on gender issues</li></ul>		
		<ul style="list-style-type: none"><li>Limited employment of females in forest and resource management due</li></ul>	<ul style="list-style-type: none"><li>Ensure equal opportunity for both male and female during forestry recruitment</li></ul>		
		<ul style="list-style-type: none"><li>Altruistic perceptions preventing women from being involved in forest management and governance</li></ul>	<ul style="list-style-type: none"><li>Education and capacity building to empower men and women in forest and resource management</li></ul>		
H	Improve sustainability of fuel wood use	<b>Opportunities</b>	<b>Enhancement Measures</b>		
		<ul style="list-style-type: none"><li>Existence of intersectoral collaboration on Charcoal and Fuel Wood production and use (FC, EPA, EC) under the law</li></ul>	<ul style="list-style-type: none"><li>Improve collaboration through formation of intersectoral body to implement law/exercise mandate in an equitable manner</li></ul>	FC, EC, EPA	
		<ul style="list-style-type: none"><li>Presence of alternative fuels on the market (Improved cook-stoves, bamboo and crop briquettes, LPG, etc)</li></ul>	<ul style="list-style-type: none"><li>Increase awareness on existence of alternative fuels for people to buy-in</li><li>Promote production and use of alternative fuels for carbon benefits</li></ul>	FC, EC	
		<ul style="list-style-type: none"><li>Existence of Renewable Energy Act that promotes the use of alternative sources of fuelwood and biomass other than natural forest</li></ul>	<ul style="list-style-type: none"><li>Strengthen education on the Act (for benefit of all)</li></ul>		
		<ul style="list-style-type: none"><li>Existing regulation/licence manual in the production of charcoal (Energy Commission, FC)</li></ul>	<ul style="list-style-type: none"><li>4. Strengthen implementation of the regulations on charcoal and other biomass fuel production</li></ul>		
		<b>Benefits</b>			
		<ul style="list-style-type: none"><li>Increased awareness on existence of alternative fuels</li><li>Investment in alternative fuels</li><li>Increased awareness on the existence of a renewable energy legal framework at the community level</li></ul>			
		<b>Risks</b>	<b>Mitigation Measures/Guidelines</b>		
		<ul style="list-style-type: none"><li>Tree species less likely to have double usage (Commercial and domestic purposes)</li></ul>	<ul style="list-style-type: none"><li>Establish woodlots for dual purposes of acquiring carbon credits and fuelwood for women</li></ul>	MLNR, FC	
		<ul style="list-style-type: none"><li>Low acceptability and behavioural change towards reform and adoption of alternate fuels</li></ul>	<ul style="list-style-type: none"><li>Education on harmful effects of unsustainable fuel wood use (for adoption of alternative fuels)</li></ul>		
		<ul style="list-style-type: none"><li>Tree tenure and benefit sharing challenges create barrier to cultivation of tree plantations</li></ul>	<ul style="list-style-type: none"><li>Address barriers in tree tenure and benefit sharing for all, especially for women</li></ul>		
		<ul style="list-style-type: none"><li>Lack of participation of women in decision making and</li></ul>	<ul style="list-style-type: none"><li>Provide entrepreneurial skills in production and distribution of</li></ul>		

FC label	Strategy Option	Opportunities/Benefits and Risks	Proposed Enhancement/Mitigation Measures to guide implementation	Responsible Institution(s)	
		selection of alternative fuels	alternate fuels		
		<ul style="list-style-type: none"><li>Limited establishment of woodlots for fuelwood</li></ul>	<ul style="list-style-type: none"><li>Create woodlots purposely for fuelwood and promote alternative energy uses</li></ul>		
		<ul style="list-style-type: none"><li>Continuous illegal exploitation of forests for charcoal and other woodfuels and flouting of regulations</li></ul>	<ul style="list-style-type: none"><li>Enforce the guidelines on biomass use, especially the production of charcoal for commercial purposes and export</li><li>Provide credit facilities for locals (especially women) to take advantage of commercial opportunities in renewable fuels</li></ul>		
I	Improve quality of fire-affected forests and rangelands	Opportunities	Enhancement Measures		
		<ul style="list-style-type: none"><li>Existence of National Wildfire Policy and Sustainable Land Management Programme</li></ul>	<ul style="list-style-type: none"><li>Adapt programme to suit the purposes of REDD</li><li>Support education on programme in communities</li></ul>	FC, GNFS, EPA, MMDAs, TAs	
		<ul style="list-style-type: none"><li>Existence of Rural Fire Department in GNFS</li></ul>	<ul style="list-style-type: none"><li>Strengthen and resource Department to function appropriately under REDD+</li></ul>		
		<ul style="list-style-type: none"><li>Existence of laws on bushfire control</li></ul>	<ul style="list-style-type: none"><li>Encourage communities to enact bye-laws to control and punish offenders</li><li>Improve stakeholder collaboration/dialogue for effective implementation of laws</li><li>Review law to reflect current institutional structure arrangements</li></ul>		
		Benefits			
		<ul style="list-style-type: none"><li>Strengthened institutions, e.g. Rural Fire Department of the GNFS</li><li>Increased awareness on the impact of bushfires/wildfires on forests</li><li>Improved capacity of local communities to control and manage forest fires</li><li>Reduced incidences/cases of fire in forests</li><li>Improved collaboration among FC, GNFS, local communities to control and manage forest fires</li><li>Investment in fire fighting equipment for forest protection</li></ul>	<ul style="list-style-type: none"><li></li></ul>		
		Risks	Mitigation Measures/Guidelines		

FC label	Strategy Option	Opportunities/Benefits and Risks	Proposed Enhancement/Mitigation Measures to guide implementation	Responsible Institution(s)
		<ul style="list-style-type: none"> <li>Weak law enforcement (e.g. PNDCL 229)</li> </ul>	<ul style="list-style-type: none"> <li>Strengthen and resource relevant institutions to enforce laws</li> <li>Enforce sanctions under the law</li> <li>Review law to reflect current situation (e.g. institutional structures)</li> <li>Review law to include modalities of effective forest fire control system of prevention, detection and suppression</li> </ul>	GNFS, MMDAs, EPA, FC, TAs
		<ul style="list-style-type: none"> <li>Lack of surveillance equipment and fire data (e.g. light aircraft, communication equipment, observation towers etc) at the institutional level</li> </ul>	<ul style="list-style-type: none"> <li>Provision of adequate surveillance equipment</li> <li>Establish fire weather /forest fire data base</li> </ul>	FC, GNFS
		<ul style="list-style-type: none"> <li>Inadequate community monitoring system and incentives for fire volunteers</li> </ul>	<ul style="list-style-type: none"> <li>Form community based fire volunteers in all identified critical areas</li> <li>Strengthen existing community based fire volunteers</li> <li>Provide basic fire control equipment to volunteers (e.g. PPEs, cutlasses, fire beaters, communication gadget etc)</li> <li>Provide periodic training and certification of volunteers</li> <li>Provide livelihood support programmes for trained volunteers for retention of volunteers</li> </ul>	GNFS, MMDAs, FC
		<ul style="list-style-type: none"> <li>Existence of international protocol arrangements/ regulation (e.g. ECOWAS Protocol) on migration that allows alien cattle herders into the country</li> </ul>	<ul style="list-style-type: none"> <li>Dialogue with appropriate agencies, chiefs, farmers, stakeholders on peaceful demarcation of grazing lands.</li> <li>Regulation of the movements of alien herdsmen</li> <li>Establishment or creation of fodder banks.</li> </ul>	Min of Foreign Affairs, MLNR, National Security
		<ul style="list-style-type: none"> <li>Group hunting activities in rangelands/forest</li> </ul>	<ul style="list-style-type: none"> <li>Sensitize communities on effects on group hunting, bushfires, climate change</li> <li>Discourage group hunting activities through sanctioning of offenders</li> </ul>	MMDAs, MLNR,
		<ul style="list-style-type: none"> <li>Limited involvement of women in fire prevention and control measures (Women are vulnerable to natural disasters but not involved in prevention programmes)</li> </ul>	<ul style="list-style-type: none"> <li>Deliberate effort should be made to involve women in emergency preparedness and fire prevention/control measures.</li> </ul>	GNFS, FC
		<ul style="list-style-type: none"> <li>Inadequate funding for the Rural Fire Department of the GNFS to function effectively</li> </ul>	<ul style="list-style-type: none"> <li>Create challenge fund for fire control</li> </ul>	MLNR, Parliament
L	Improve regulation of	<b>Opportunities</b>	<b>Enhancement Measures</b>	
		<ul style="list-style-type: none"> <li>Existence of the EPA Act 490 and EIA requirements</li> </ul>	<ul style="list-style-type: none"> <li>Strengthen monitoring and supervision by relevant institutions</li> </ul>	EPA, MC, FC



FC label	Strategy Option	Opportunities/Benefits and Risks	Proposed Enhancement/Mitigation Measures to guide implementation	Responsible Institution(s)
	mining activities to reduce forest degradation		for effective implementation of activities under EIA	
		<ul style="list-style-type: none"> <li>Recent political will to curb illegal mining activities</li> </ul>	<ul style="list-style-type: none"> <li>Regularize and sustain efforts of national task force on illegal mining</li> </ul>	Office of the President, MLNR,
		<ul style="list-style-type: none"> <li>New regulations on Mineral and Mining</li> </ul>	<ul style="list-style-type: none"> <li>Create awareness on new regulations at the community level especially on small scale mining activities</li> </ul>	MC
		<ul style="list-style-type: none"> <li>Existing collaboration between FC and MC, EPA on mining in production forest reserves</li> </ul>	<ul style="list-style-type: none"> <li>Strengthen collaboration to include joint monitoring programmes</li> </ul>	FC, MC, EPA
		<b>Benefits</b>		
		<ul style="list-style-type: none"> <li>Improved collaboration among FC, Minerals Commission, National Security, Traditional authorities and local communities</li> <li>Reduced mining activities in forests</li> <li>Increased awareness on impact of mining on the environment and forest resources in particular</li> <li>Clear policy and legal framework for mining in forests</li> </ul>		
		<b>Risks</b>	<b>Mitigation Measures/Guidelines</b>	
		<ul style="list-style-type: none"> <li>Lack of clarity in institutional mandate to safeguard mineral resources</li> </ul>	<ul style="list-style-type: none"> <li>Need to clarify institutional mandates on safeguarding mineral resources</li> </ul>	National security, EPA, MC
		<ul style="list-style-type: none"> <li>Widespread illegal small scale mining/galamsey activities</li> </ul>	<ul style="list-style-type: none"> <li>Regularize and sustain efforts of national task force to curb illegal mining</li> <li>All relevant institutions/agencies should enforce their regulations</li> <li>Adopt and apply punitive sanctions to offenders/ illegal miners</li> <li>Create awareness on new mining regulations especially concerning small scale mining at the community level</li> <li>Investigate and identify financiers of illegal small scale mining and extend punishment to cover financiers</li> <li>Educate TAs not to release land for illegal mining and extend punishment to landowners who knowingly release land for illegal mining</li> </ul>	FC, EPA, MC, National Security, TAs, MMDas
		<ul style="list-style-type: none"> <li>Cost burden and prolonged EIA processes and acquisition of permits for small scale mining could be discouraging</li> </ul>	<ul style="list-style-type: none"> <li>Simplification of procedures/processes and decentralization of permit acquisition for small scale mining</li> </ul>	EPA, MC

FC label	Strategy Option	Opportunities/Benefits and Risks	Proposed Enhancement/Mitigation Measures to guide implementation	Responsible Institution(s)
		<ul style="list-style-type: none"> <li>• Vested interest in illegal small scale mining/galamsey activities</li> </ul>	<ul style="list-style-type: none"> <li>• High level multi-stakeholder dialogue (e.g. politicians, chiefs, influential people etc) required to address issue</li> </ul>	House of chiefs, political parties, parliament, MLNR
		<ul style="list-style-type: none"> <li>• Land owners /cocoa farmers willing to release land for illegal mining activities for monetary compensation</li> </ul>	<ul style="list-style-type: none"> <li>• Create awareness and educate land owners/farmers of such illegal practices and long term benefits</li> <li>• Apply punitive measures or sanctions to offenders</li> </ul>	TAs/ landowners
		<ul style="list-style-type: none"> <li>• Illegal involvement of foreigners in small scale mining</li> </ul>	<ul style="list-style-type: none"> <li>• Improve field monitoring by key institutions</li> <li>• Enforce laws and policies on foreign involvement</li> </ul>	Ghana Immigration Service, MC
		<ul style="list-style-type: none"> <li>• Limited awareness on mining policies, regulations and laws especially at the community levels</li> </ul>	<ul style="list-style-type: none"> <li>• Sensitize local communities on mining, environmental and forest laws/policies</li> </ul>	MC, EPA, FC
		<ul style="list-style-type: none"> <li>• Occurrence of mineral resources in forests and cocoa growing areas</li> </ul>	<ul style="list-style-type: none"> <li>• Follow guidelines for mining in production forest reserves for mines operating/exploring in forest reserves</li> <li>• Review policy of mining in production forest reserves through environmental cost benefit analysis of policy</li> <li>• Enact a law to protect REDD+ designated areas against Section 3 (land available for mineral right) and Section 72 (surface rights) of the Mining and Mineral Act 703</li> <li>• Incorporate timber species as part of LVD tree species and revise LVD rates annually</li> </ul>	MLNR, EPA, FC, MC, LC
		<ul style="list-style-type: none"> <li>• High price for gold and other mineral resources</li> </ul>	<ul style="list-style-type: none"> <li>• Strictly enforce regulations</li> <li>• Review terms of investment agreement with prospective mining companies to make mining in REDD+ designated areas unattractive.</li> </ul>	MLNR, MC, FC

#### 6.4 Analysis and Refinement of Proposed REDD+ Strategy Options

An analysis of the proposed 13 REDD+ Strategy options was carried out as part of the SESA process to aid in the refinement of the strategy options. The analysis was to determine economic and environmental relevance of strategy options and overlaps among the strategy options. The review was carried out through:

- Comments from the regional workshops;
- SESA consultants collaboration with Pwc, who have been contracted to design Ghana's REDD+ Strategy; and
- Analysis of strategy options by SESA consultants.

The table below shows the outcome of the analysis.

**Table 6.6: Outcome of analysis of Proposed REDD+ Strategy Options**

Proposed Strategy Option	Suggestions from Regional Workshop	Collaboration with Pwc	SESA Consultants Review
A. Improve the quality of multi-stakeholder dialogue and decision –making	-	-	-
B. Clarify natural resource rights	-	-	-
C. Improve forest law enforcement, governance and trade	-	-	-
D. Address unsustainable timber harvesting by supporting sustainable supply of timber to meet export and domestic / regional timber demand	D automatically takes care of E. – Tamale Workshop	-	D takes care of E & J. The word domestic in D takes care of the local situation which has been separated as E & J.
E. Address problem of local market supply	The high demand for timber outstripping supply is the issue. The strategy option should target addressing local demand–supply gap (strategy options E & J) - Tamale workshop		Is indirectly covered by D. Sub-component activities should be retained and brought under D.
F. Mitigate effects of agricultural expansion (particularly cocoa in the HFZ)	-	-	-
G. Strengthen local decentralised management of natural resources	-	-	-
H. Improve sustainability of fuel wood use	-	-	<i>Improve sustainability of fuel wood supply and use</i>
I. Improve quality of fire-affected forests and rangelands	-	-	

J. Address local market demand	The high demand for timber outstripping supply is the issue. The strategy option should target addressing local demand–supply gap (strategy options E & J) - Tamale workshop		Is indirectly covered by D Sub-component activities should be retained and brought under D.
K. Improve returns to small-scale enterprise	-	Is an alternative livelihood/economic issue and could be appropriately put under F.	Does not address any specific driver of deforestation/forest degradation. Can be appropriately put under F. and or D
L. Improve regulation of mining activities to reduce forest degradation Rehabilitation of degraded forest reserves	-	-	-
M. Implement actions to address acts of God (wind and natural fire events, floods, pests and diseases	-Change 'Acts of God' to 'Acts of Nature' – Kumasi and Takoradi workshops. -Bush fires in Ghana are mostly man made – Tamale workshop	Pursuing this option as a strategy may not make economic sense. Recommends its deletion from the strategy options	-'Wind' not identified as a major cause of deforestation/degradation from the SESA interactions. -'Natural fire' not agreed upon by stakeholders at the workshops as a major threat to deforestation /degradation. Stakeholders generally agree that bush fire or wildfire occurrence in Ghana are mostly man-made or anthropogenic. -'Pests and diseases' not identified as a threat to deforestation/forest degradation. Pests and diseases identified as a threat to crops/farming/ agriculture than forestry. Pest and diseases management or strategy should come under F, where productivity of farmlands is targeted.

### The term 'REDD+ Strategy Options'

A review of the various indicative strategy options shows that the proposed strategy options address specific issues of deforestation/forest degradation and therefore are not options available for selection. Pwc and SESA consultants suggest that the term strategy options should be changed to strategy interventions.

## 7.0 RECOMMENDATIONS

### 7.1 Introduction

The implementation of the proposed strategy interventions (options) for the REDD+ Mechanism in Ghana will offer a number of opportunities to local communities, landowners, and farmers which will improve their livelihoods. However, this must be done with greater consideration for sustainability. The implementation of the strategy interventions must satisfy the requirements of the four pillars of sustainable development, which include; natural resources, socio-cultural, economic and institutional issues.

The opportunities and risks developed for the various strategy options is a key reference point for the appropriate enhancement and mitigation measures to be considered for the specific strategy intervention to be implemented. This chapter presents recommendations, which will help in the implementation of the REDD+ Mechanism in order to achieve sustainable development.

### 7.2 Recommendations

#### 7.2.1 *Natural Resources*

##### **Protection of water resources and adopting riparian buffer zones as REDD+ designated areas**

In all the three regional workshops, development of buffer zones around key rivers/water bodies into forest was one of the top five priorities. It is recommended that buffer zones around selected key rivers be part of REDD+ designated areas while implementing the riparian buffer zone policy. This will involve enactment of bylaws, demarcation of boundaries, acquisition of buffer areas where necessary, provision of alternative livelihoods or relocating farmers beyond the buffer zones by supporting them through irrigation options and enforcement of buffer zones along selected water bodies. Stakeholders should agree on the key rivers to be selected. This will require collaboration among key institutions such as WRC, FC, EPA, MMDAs and TAs. Lessons should be learnt from the Sustainable Water and Lands Management Project coordinated by the EPA and implemented at the northern savanna eco-agricultural zone of the three northern regions (Northern, Upper East and Upper West Regions) of Ghana to improve this proposed intervention.

##### **Promote Dedicated Forests/Community Forests and CREMAs under REDD+**

Dedicated forests are designed to enable communities to manage their own forest 'reserves' based on approved management plans. These are in the form of patches of forests, sacred groves and secondary forests in off-reserve areas. A dedicated forest management scheme was initiated in 1994, under a pilot scheme, two communities were assisted to declare and manage Dedicated Forests (215 ha & 190 ha), in Fosu district. The results proved very positive, and draft legislation and a programme to promote dedicated forests were formulated in 1997, but no further action was taken.

It is recommended that dedicated forests or community forest concept be revisited and the suspended draft legislation modified to include benefits under REDD+ and pursued into law. The legal backing will ensure that chiefs or TAs cannot in themselves change the land use of such dedicated forests.

The concept of CREMAs appears to be gaining grounds in the communities around protected forests. Currently, there are about 27 CREMAs country-wide. It is recommended to promote the concept and formation of CREMAs under REDD+ to cover GSBAs.

### **Protected Reserves and Globally Significant Biodiversity Areas (GSBAs)**

It is recommended that all protected reserves (with their CREMAs) and GSBAs be considered as REDD+ designated areas. This will enable the landowners, stool and local communities to benefit from carbon credits under REDD+ as a form of payment for environmental services. Currently, the TAs/stool/local communities do not enjoy any form of royalty payment from GSBAs because there is no timber exploitation allowed in these areas. This issue is of major concern to TAs whose jurisdiction cover GSBAs because their counterparts in charge of production FRs enjoy royalty payments. Unlike protected reserves which are expected to be acquired by the State with appropriate compensation payment to land owners, it is not the case with production FRs and GSBAs.

### **Preparation of Pest & Pesticide Management Plan (PPMP)**

Climate change, trade liberalization, and agricultural intensification activities under REDD+ (e.g. irrigation farming, increased fertilizer and pesticides use, introduction of new crops and varieties, changes in land use and landscape etc.) could trigger the occurrence of new pest problems.

It is recommended that when REDD+ sub-component activities are finalized, a Pest & Pesticide Management Plan be prepared for REDD+. The plan should include arrangements for frequent pest risk surveillance and modalities for continuous updating of the existing pest list. The EPA and the PPRSD are currently the lead institutions in managing invasive alien species and should be key actors in the preparation of the PPMP for REDD+.

## **7.2.2 Socio-cultural**

### **Partnerships with Traditional Authorities**

The traditional authorities have a huge influence on forest reserve lands under their domain, land allocation for agricultural/ farming purposes, land-use and development in the country and are therefore very critical in the implementation of the REDD+ Mechanism. Conscious effort must be made to develop partnerships with them.

The 1974 Report of the Committee of Enquiry into the Grievances of Farmers being ejected from certain Forest Reserves (Manzan, Sukusuku, Bia Tawya, Bodi and Tano-Ehuro) in the Western Region (constituted in April 1974) concluded that some traditional authorities were involved in granting lands in forest reserves to farmers, most of whom were strangers/settler farmers; and also where there are disputes between traditional authorities/paramount chiefs, some chiefs illegally grant lands in such disputed areas to farmers presumably to establish their authority over these disputed lands.

Some traditional authorities/some members of the National House of Chiefs were involved during the preparation of the REDD+ Readiness Preparatory Proposal, and some traditional leaders also took part in meetings and workshops organized as part of the SESA process and made useful contributions. The meetings and interaction with the Traditional Authorities should be regularized and strengthened to ensure their total support for the REDD+ Mechanism.



A REDD+ caucus of chiefs for the cocoa landscape should be put in place for regular engagement, to solicit support for and promote the agricultural tenancy agreement under the LAP for the cocoa landscape, information dissemination on REDD+ and for advice. Alternatively, the FC could have regular engagement with the various Regional Houses of Chiefs especially within the cocoa landscape (e.g. Western, Eastern Ashanti, Brong Ahafo, Central and Volta Regions) on REDD+, solicit support for the agricultural tenancy agreement under LAP. The FC can support the formation of subcommittee on REDD at the Regional House of Chiefs level and also take advantage of their meetings to make presentations on REDD, disseminate information and solicit their input/support and advice among others.

### **Gender and Socially Exclusive/Vulnerable**

#### Gender affirmative action for REDD+ implementation structures

Gender issues were raised, discussed and captured as part of the SESA in both the Scoping and SESA Reporting. A gender road map for REDD+ was developed in November 2011 by IUCN and FC. To address the possibility of gender discrimination against women and vulnerable groups, the application of gender affirmative action should be mandatory in REDD+ programmes and structures. The benefit sharing structures, dispute resolution structures, implementation, M&E structures and MRV system should all have a gender officer or co-ordinator with a gender 'eye' as part of the teams. Furthermore, gender orientation and training should be given to FC frontline staff, district/regional FC officials, REDD+ Secretariat staff, and such gender orientation should also devolve to the TAs and community level as part of all REDD+ community engagement programmes to eliminate gender/social conflicts that could arise during REDD+ implementation.

#### Special assistance/support to vulnerable groups/women

Vulnerable groups (e.g. landless farmers, settler farmers without proper land documents, women (especially widows), physically challenged farmers etc) should be identified and assisted. Vulnerable groups should be assisted with land documentation requirements and obtain legal title to lands. Competition and high demand for land in all the communities, promote encroachment on forest reserves for forest resources and products. Most rural women do not often have the financial means to expand or lease land for farming and will require some financial support to be able to access land for REDD+ projects. Co-ownership of land among spouses often bring conflict resulting in divorce and rancor. An MOU should be developed to cover co-ownership of land for REDD+ projects clearly indicating benefit sharing arrangements.

### **Protection of Culturally Sensitive Sites**

The implementation of the REDD+ interventions should identify and protect culturally sensitive areas as prescribed in the Environmental Assessment Regulation 1999, LI 1652. Key culturally sensitive sites include cemeteries, shrines and sacred groves. Some of the measures that can be introduced may include:

- No relocation of key culturally sensitive sites in on-reserves or off-reserves under REDD+ interventions;
- Provision of access to communities/TAs to culturally sensitive sites in on-reserve as well as at off – reserve areas designated as REDD+;
- Support for and enhancement of identified/designated cultural heritage sites; and
- Monitoring to prevent encroachment and abuse of such areas.

### **Recognise and Manage Socio-cultural Norms**

Socio-cultural factors play vital roles in programme/project success or failure. It is indispensable therefore in land use and management. Those whose access to land is purely rooted in culture and inheritance are most likely to be hit by this. Therefore where family/clan lands are involved, the consultations should go beyond the stool/traditional authorities to the family level. Cultural restrictions and traditional norms that do not ensure equity in land distribution and ownership with respect to gender need to be addressed in collaboration with respective traditional authorities especially in the savannah zone.

### **Food Security Implications under REDD+**

Food security issues under REDD+ was one of the top five prioritized issues from the three regional workshops. The field consultations also revealed that the modified taungya system of rehabilitating forest reserves not only improved food production in the country during the period but also enhanced income of beneficiary farmers. It is recommended that the modified taungya system be used or adopted where appropriate for rehabilitation of forest reserves. Lessons should also be learnt from previous modified taungya system especially with regard to RMSC capacity, data storage and monitoring to improve the system.

It is also recommended that off-reserve tree plantation projects should have a specified percentage of land (i.e. out of the total area earmarked for the plantation project) to be dedicated to or put under food/crop cultivation. The percentage of land to be allocated for crop cultivation should be agreed upon by relevant stakeholders including MoFA, FC, NGOs. The sub-component activity of improving productivity of farmlands (under Mitigate effects of agricultural expansion (particularly cocoa in the HFZ)) be properly executed with the involvement of MoFA at the district and regional level to ensure success, which will go a long way to improve and increase food production.

### **Illegal Farms/Settlements**

In addressing illegal farms/settlements in Forest Reserves, varied approaches have to be adopted. For farms where mostly crops cultivated are of annual duration, the modified taungya system could be adopted, and this could improve local food production and security and management of the forest resources. For farms where mostly perennial crops are cultivated, a cut-off arrangement is required to prevent future expansion of the farm in the reserve. With regard to illegal settlements, the law should be enforced.

## **7.2.3 Economic**

### **Sustainable Alternative Livelihoods for Communities heavily dependent on forest resources**

Some alternative livelihood schemes were suggested during the field consultations and these include:

- Animal rearing: sheep, goats, etc
- Non-farm business: soap making, tie/dye, sewing/dressmaking etc
- Tree crop/fruit production- Mango, water melon (transition/savanna zones)
- Vegetable production – with irrigation support
- Vetiva grass for baskets leather works smock
- Irrigation farming- food crops
- Aquaculture
- Bee-keeping
- Tree seedlings cultivation for commercial purposes

There are some alternative livelihood projects ongoing in the forest fringe communities in the Western Region but consultations with local communities revealed that such projects were not properly monitored and the income derived from these projects were not sustainable. It is recommended that alternative livelihood projects to be implemented under REDD+ should include adequate monitoring mechanism to ensure that the objectives are achieved. Identification and inclusion of markets/consumption outlets for such projects should form part of the project concept. The alternative livelihood projects should especially target the lean/ dry seasons when farming activities are minimal or absent and should also be gender responsive.

It is recommended that tree crop /tree fruit production, woodlot production for commercial purposes as well as irrigation farming be seriously considered for transition/savanna zones as sustainable alternative livelihood scheme options.

For the HFZ farmers, no specific sustainable alternative livelihood schemes are recommended across board. However, as indicated earlier, markets, monitoring and ensuring returns to such small scale enterprises should be part of the planning arrangement of the scheme to ensure sustainability of such schemes or projects or schemes.

With regard to the provision of alternative livelihood schemes for illegal chain saw operators, the following are recommended:

- Support artisanal lumber/illegal chain saw operators with micro-credit for livelihood activities for income generation.
- Support artisanal lumber /illegal chain saw operators to go into tree plantation projects
- Reform law to implement artisanal milling on national level
- Train artisanal/illegal loggers into production and distribution of improved cook-stoves/fuels for carbon credits

Alternative means of addressing economic and livelihood activities in the transition and savannah zones is appropriate to discourage unwarranted use of forest resources.

#### **Promote reliable, affordable and sustainable sources of energy and alternative cooking technologies**

Under Strategic Option H (Improve sustainability of fuel wood use), the FC should collaborate with the Energy Commission under the REDD+ mechanism to promote affordable, reliable and sustainable sources of energy and alternative cooking technologies, e.g. clean cookstove technology, use of LPG gas for cooking, etc especially in the local communities in the transition and savannah ecological zones. This will reduce the use of charcoal and fuel wood as energy sources. It will reduce the time and effort of women directed to cooking or at the kitchen, with positive health impacts and saving their time for other productive purposes geared towards additional income generation, which will go a long way to improve family wellbeing and income.

The Government of Ghana /Ministry of Energy should ensure that the pricing of LPG gas for domestic usage (e.g. when the Ghana Gas Project is in full operation) should not be dependent on economic factors alone (e.g. cost of production, demand/supply or market forces etc) but environmental consideration should be factored). Most of the charcoal produced in the transition zone is transported to the south for use. Though the SESA did not conduct specific study into charcoal and LPG gas usage at household levels, it has become a common practice for people to buy charcoal in addition to gas, because of the issue of reliability and price of gas.

#### **7.2.4 Institutional**

##### **SEA Capacity building/Training for FC REDD+ Secretariat & FC frontline staff**

The SEA/SESA reports are living documents which should be used to guide further refinement and implementation of proposed REDD+ strategy interventions where necessary. As the whole concept of REDD+ is still evolving, new strategy options or revision of proposed strategy options are likely to emerge.

It is recommended that capacity building/training for key FC REDD+ Secretariat staff as well as FC frontline staff at the head office and regions in SEA principles be organised. This will also position the FC to be able to carry out basic SEA and sustainability appraisals for its policies/plans/programmes within the various divisions of the FC with the aim of mainstreaming environmental and social considerations at the policy or strategic level of decision making for the forestry sector of Ghana. In this way, the FC interventions will become more sustainable, environmentally friendly and socially acceptable. The Ghana EPA offers such SEA training programmes and has considerable experience and capacity to carry out such training if requested.

##### **Conduct of EIA/SIA for REDD+ Sub-projects**

This SESA was done at a strategic level and therefore not meant to identify and address location and site specific environmental/social impacts. During the implementation of various specific interventions, specific individual project level assessments must be done to address site specific project impacts in accordance with LI 1652. Initial screening of subprojects using EPA Form EA 1 can be carried out to inform the Agency on what level of reporting or permitting is required. Possible interventions such as acquisition of large tracts of land for tree plantations in off-reserve areas may have the potential to generate site specific significant environmental/social impacts and must therefore be subjected to detailed EIA or SIA in order to make them environmentally sound, socially acceptable and economically feasible. The EPA requires that undertakings in excess of 40 ha be registered with the Agency and permit obtained prior to implementation.

##### **Use of spatial analysis and GIS Maps at the district/regional levels**

The findings from the spatial analysis and forest cover trends (for 1990, 2000 and 2010) threw more light on the role of remote sensing and GIS in forest management. It could be observed that both vegetation cover (forests) have undergone some degree of degradation over the period.

It is recommended that the FC/RMSC procure images of the same time overpass (date) in each of the years so as to get as much as possible the same energy reflectance captured by the sensors. It is also recommended that in-depth ground truthing be carried out to validate the findings because re-coding sections of the images without in-depth field validation could also affect the classification.

The Forestry Commission should take measures to develop a project which will establish the forest cover trends showing fringe communities for all the forest reserves and protected areas in the country and make such maps available to the district/regional FC officials to facilitate field monitoring.

## Legal/Policy Reforms

### Reforms and Amendments for REDD+

In addition to the ongoing reforms and discussions on tree tenure, carbon rights allocation, the following should also be pursued for REDD+:

- Review of the 1999 Land Policy: Section 4.4 (d) of the land policy should be reviewed to include use of off-reserve areas also for community forestry/resource management areas.
- The FC should collaborate with the MC during designation of REDD+ areas in off-reserves. Currently, there are a number of mineral right holders carrying out various exploration/prospecting activities and their concession areas should be taken into consideration in the selection of off-reserve REDD+ areas.
- The FC should push for a policy or law, which will give some level of protection for REDD+ designated areas in off-reserves with regard to land subject to the allocation of Mineral rights (Section 3 of the Mineral and Mining Act 2006, Act 703 and surface right issues (Section 72 (1) of the Minerals and Mining Act 2006, Act 703). This should be done in consultation with the Minerals Commission.
- Amendment to the Alternative Dispute Resolution Act 2010, Act 798 to include in its scope of application some environmental/forestry matters (and specify which environmental matters to be included in the scope in agreement with key stakeholders such as EPA, FC, WRC, LC, MC, FC) or specifically include in the scope of application forestry matters as applied to REDD+.

### Admitted Farms/ Settlements in Forest Reserves

Admitted farms/settlements were allowed during the creation of forest reserves. These farms/settlements have gone beyond their demarcation/ recognized boundaries over the years and so extending their activities further into the reserves, causing further deforestation/forest degradation. These farms/ settlements have also become pretext for unrestricted access into such reserves by all kinds of people with diabolical intentions (e.g. to carry out illegal activities - encroachment, farming, chain saw activities).

In the immediate term, boundary demarcation for such farms should be undertaken as a matter of urgency to curb the menace posed by admitted farm expansion. The FC should clearly have a written agreement which spells out to the admitted farmers/settlers their roles/responsibilities and underlying reasons of their continual existence in the forest.

In the long term however, this policy of admitted farms/settlements is not in tandem with the principles of forest conservation or protection and should be reviewed if not abolished. During the field engagement, the WD of the FC in Takoradi indicated that the Division has successfully relocated all settlements/farms in its protected areas and we recommend the same to be carried out for affected production forest reserves.

### Litigation and Penal System

5. The FC should collaborate with the Judiciary/ Chief Justice on how to form special tribunals in selected regions (e.g. Western, Brong Ahafo and Northern Regions) to speedily dispose of litigation in forest offences/ forest reserves.
6. The FC in collaboration with the EPA and WRC should organise a training workshop
  - a. to discuss and share information on better ways of creating synergies among the Judiciary, Police, Forestry Commission and other stakeholders so that cases involving forestry offences/

forest reserves or general environmental matters are correctly prepared within shorter time-frames and successfully brought before the court and adequately and fairly prosecuted and adjudicated according to law with deterrent fines and penalties.

- b. To discuss forestry and environmental laws and also the ecological justification for the conservation of forests/biodiversity to ensure protection of water bodies, climate change issues, livelihoods security for local communities highly dependent on the forest resources.
7. The FC should enhance the capacity of its prosecutors to be able to prosecute effectively and also seek injunctions on illegal farming activities in the reserves. Hitherto, when FC field officers attempt to destroy illegal farms in FRs, farmers go to court seeking injunctions to restrain FC field officers from destroying such illegal farms. Meanwhile the illegal farming activities continue and many times farmers do harvest even before court cases are finally determined. There is no restrain or injunction on the farming activity. Injunctions should restrain both parties' access to land in dispute.
8. The Forest Protection (Amendment) Act 2002, Act 624 has been in existence for the past twelve years. The Act should be reviewed to consider harsher and deterrent fines and penalties. It is recommended that the fines be reviewed every two or three years (e.g. in like manner as the Fees and Charges Instrument are regularly reviewed or amended for the public sector).

#### Declassification of some forest reserves

It is recommended that further studies be conducted on all Forest Reserves to determine those forest reserves which are almost depleted and beyond recovery due to conversion into other land use. These FRs should be declassified as such. Identified patches of forests or sacred groves or secondary forests in such affected reserves should be given to the community or stool to manage under dedicated forest or community forest management arrangement.

The Juabeso Forest district in the Western Region has 7 forest reserves, all of which are suffering degrees of encroachments. Four of the reserves are almost converted to cocoa farms and settlements while the remaining are under stress. The under listed reserves may be very difficult, if not impossible to restore as a natural forest reserve and therefore recommended that these reserves be declassified into a cocoa forest area:

- Sukusuku FR
- Manzan FR
- Bia-Tawya FR
- Bodi FR

#### **Provision of Adequate Resources and Motivation of FC Staff**

The FC should provide adequate resources (human, financial and equipment/logistics) for monitoring and restoration activities in the forest reserves/protected areas. The FC staff should be adequately motivated (e.g. provision of PPEs, security issues, salary/allowances, issues of promotions etc) to minimize or prevent corruption and bribery.

#### **Political Will and Financial Commitment**

A non-partisan approach should be adopted to secure political will in curbing illegal activities in the on- and off reserves. The FC should liaise with a reputable international NGO (e.g. IUCN) to organize a bi-partisan conference on the state of the Ghanaian forests/environment and the climate change threats for the major political parties in the country, key TAs and other relevant NGOs. The purpose of the conference



is to arrive at a consensus going forward. There is also the need to make available, adequate financial resources for forest management.

**Cross Sectoral/Institutional Collaboration from National to District Levels**

The implementation of the REDD+ interventions cuts across sectors (e.g. forestry, agriculture, cocoa, energy, water resources, mining, fire, among others) and would involve a number of institutions. This could generate conflicts and duplication of roles and responsibilities. Effective structures, arrangements and communication should be established to promote cross sectoral collaboration and dialogue among relevant sector agencies from the national level to the district level where actual implementation of projects will occur to ensure that all challenges/ bottlenecks with implementation and monitoring of any intervention are timely resolved.

The REDD+ should support and take advantage of the various opportunities or similar interventions ongoing under relevant public sector agencies (e.g. COCOBOD, MoFA, EPA, MMDAs) and involve or use such agencies to deliver or implement such REDD+ projects instead of creating parallel structures at the FC to implement such projects. Proper MOU/contract and budget should be put in place to guide the collaboration with relevant institutions.

## 8.0 INDICATORS, MONITORING AND EVALUATION PROPOSAL

### 8.1 Introduction

An Environmental and Social Management Frameworks (ESMFs) have been prepared for the REDD+ Mechanism and FIP interventions. Roles, responsibilities, capacity building and training requirements for effective implementation and monitoring of the environmental/social requirements are proposed in the ESMFs. Monitoring plans will be required and should be developed at the project level to track safeguard provisions at the sub-project activity levels.

### 8.2 Formulation of Indicators

#### 8.2.1 *Criteria for Selection of the Indicators*

Under the OECD (1993) guidelines, three basic criteria have been defined for the selection of indicators; these are policy relevance, analytical soundness and measurability. For policy relevance, indicators should:

- provide a representative picture of environmental conditions, pressures and responses;
- be simple, easy to interpret and able to show trends over time;
- be responsive to changes in environment and human activities;
- provide a basis for international comparisons;
- be either national in scope or applicable to regional environmental concerns; and
- have a threshold or reference value for comparison purposes.

For analytical soundness, indicators should:

- be theoretically well founded in technical and scientific terms;
- be based on international standards and international consensus about their validity; and
- lend themselves to being linked to economic models, forecasting and information systems.

In order to be easily measurable, the data required to derive indicators should be:

- readily available at a reasonable cost/benefit ratio;
- adequately documented and of known quality; and
- able to be updated at regular intervals in accordance with reliable procedures.

Certain qualifications of the use of indicators should also be noted, and of relevance in the context of the REDD+ strategy interventions are the qualifications that:

- indicators often need to be supplemented by other quantitative and qualitative information to aid accurate interpretation;
- indicators must be reported and interpreted in the appropriate context, taking account of relevant ecological, geographical, socio-economic and other conditions; and
- policy and activity responses may not be quantifiable in simple indicators but may nonetheless provide useful qualitative supplementary information.

#### 8.2.2 *Types of Indicators Proposed*

A series of simple biophysical and socioeconomic environmental indicators are developed to assist in the periodic monitoring and evaluation of the implementation of the strategy interventions. These indicators

were developed as part of the preparation of the Environmental and Social Management Framework for the REDD+.

The Indicators shown in **Table 8.1** are provided as guide based on the proposed interventions. It is anticipated that further inputs will be made into developing the proposed indicators further at the sub-project activity level where monitoring plans are expected to be developed in order to ensure effective monitoring and evaluation of the sub-project implementation.

**Table 8.1: Proposed Indicators**

Potential impact issues/	Proposed Indicators	Verification
<b>Biophysical Environment</b>		
Water Resources	<b><u>Key indicators</u></b> -Presence of buffer zones -Local water quality satisfactory	Field inspections
Forest Management	<b><u>Key indicators</u></b> -Fire fighting equipment -Fire belts -Programme for patrols drawn -Community involvement documented <b><u>Other</u></b> Forestry policy	Site reports Special audits by project Third party audits Annual monitoring by E&S Focal Point
Biodiversity	<b><u>Key indicators</u></b> -Exotic and indigenous trees in tree plantations -No sensitive sites affected -Presence of biodiversity plots/ designated areas <b><u>Other</u></b> Plots cleared in phases	
Soil	<b><u>Key indicators</u></b> -Plantation development records -Satisfactory soil quality -Identified and documented erosion risk areas <b><u>Others</u></b> -Presence of vegetation in such areas -Planting trees along slopes	
Pesticides/agro-chemical usage in farmlands and plantations	<b><u>Key indicators</u></b> -Availability of Pest control devices as mentioned -Phyto- sanitary equipment at site -Pest management plan for project <b><u>Others</u></b> -No broadcasting of fertilizers	

	-Manual Control of weeds by labour-intensive approaches. -Use of Organic farming practices	
<b>Socio-cultural and economic</b>		
Land tenure and ownership	<b><u>Key indicators</u></b> -Proper documentation available -Disputes registered -Grievances resolved and recorded	Field inspections  Site reports
Cultural heritage	<b><u>Key indicator</u></b> -Cultural rites agreed and documented	Special audits by project
Maintaining livelihoods	<b><u>Key indicators</u></b> -Alternatives provided -Support and incentives available -Proper and acceptable results documented	Third party audits  Annual monitoring by E&S Focal Point
Farmers/community rights	<b><u>Key indicators</u></b> -Local customary land rights respected -Grievances documented and resolved	
Occupational health and safety	<b><u>Key indicators</u></b> -Availability and use of PPEs -Number of training sessions held	
<b>Security and Safety</b>	-Communication and media campaign at local communities and stakeholders -Community involvement documented	

### 8.3 Types of Monitoring

Three types of monitoring are proposed for monitoring the environmental and social performance of the REDD+ activities and these include:

- Baseline monitoring;
- Impact monitoring; and
- Compliance monitoring

#### 8.3.1 Baseline Monitoring Data

Baseline monitoring will provide information or data on the existing environmental and social conditions of the project area. Some baseline data and statistics for comparison could be obtained from relevant government agencies or research institutions. Example, some secondary baseline data and statistics for comparison could be obtained from the Forestry Commission (information on forest reserves, timber etc), Water Resources Commission/Water Research Institute of CSIR (river basin/catchment issues, Water quality, river flows etc), information on Cocoa production, cocoa farmers, yield etc from COCOBOD, information on Agriculture from MoFA, Ghana Statistical Service (GSS), Bank of Ghana, among others.

However, it will be needful to collect some primary data on environmental resources and socio-economic and cultural setting of the project area prior to the implementation of any REDD+ project. Such data are usually collected to provide the basis for undertaking environmental/social studies such as ESIA, resettlement plans, gender action plans among others and also to update or verify existing secondary data obtained from relevant institutions.

### **8.3.2 Impact Monitoring**

The actual impacts caused by project Implementation should be closely monitored during project implementation in order to examine the effectiveness of the mitigation measures. The goals of monitoring are to measure the success rate of the project, determine whether interventions have resulted in dealing with negative environmental/social impacts, and whether further interventions are needed or monitoring is to be extended. Impact monitoring will also help to identify new impacts which were not predicted may be due to modification in project activities or natural processes. It should focus on key indicators especially those recommended at the ESIA and project implementation stages.

### **8.3.3 Compliance Monitoring**

Compliance monitoring should be carried out to ensure that environment and social protection measures are complied with. Environmental/social protection measures should be incorporated into project implementation documents. The environmental/social protection measures can be obtained from the SESA report, the ESMF and RPF reports as well as the ESIA and ESMP reports to be produced at the project implementation stage where necessary.

## **8.4 Methods for Monitoring Indicators**

The methods to use in monitoring the indicators shall include field inspections, surveys, audits, sampling and laboratory analysis. The use of Geographical Information System (GIS) would also provided factual information on interrelated environmental components/forest cover and the changes that have occurred during a monitoring period.

## **8.5 Monitoring and Evaluation System/Safeguard Information System**

It is important to keep track of the implementation of the REDD+ programmes and its associated environmental and social impacts to ensure that local communities/farmers and the environment is not made worse off. In order to achieve this, a Monitoring and Evaluation (M&E) system for REDD+ should be designed to utilize a set of performance /development criteria that are associated with various REDD+ interventions.

The M&E system should be *transparent and participatory*. The outcome of the monitoring process should be used to evaluate the attainment of set goals and targets, and provide information for the periodic review and evaluation of the interventions.

### *Consultative process for M&E of Safeguards*

Free prior and informed consent (FPIC) or free prior and informed consultation need to be included in the design and implementation of REDD+ projects. Detailed information about the project and potential impacts should be provided to potentially affected persons/communities. A consultative process should be built into the M&E system to obtain feedback from affected persons, women groups, vulnerable groups

identified, local communities/farmers, CSOs and other stakeholders as appropriate. It is recommended that the M&E system is hosted on the FC CCU website to encourage wide participation in the M&E exercise, and to promote transparency and accountability.

*Training and Capacity Building for M&E of Safeguards*

The deployment of the M&E system should be accompanied by a package of appropriate training and capacity building to enable stakeholders to participate in the monitoring and evaluation of environmental and social safeguards as intended. This is to ensure that an effective feedback, communication and information sharing system are accessible to all parties affected by the implementation of the interventions.

*Make M&E of Safeguards as a subcomponent of M&E for REDD+ programmes*

It is proposed that the monitoring and evaluation system for environmental and social safeguards be linked or incorporated into the overall REDD+ Monitoring and Evaluation (M&E) system to avoid duplication of structures.

The FC CCU should establish a Safeguard Information/Database System (SIDS) which should include environmental and social information/data of REDD+ projects accessible to stakeholders and consistent with the UNFCCC safeguard requirements.



## 9.0 BIBLIOGRAPHY

- Adu-Bredu, S., M. K. Abekoe, E. Tachie-Obeng & P. Tschakert. 2010. Carbon stock under four land-use systems in three varied ecological zones in Ghana. In: Bombelli, A. & R. Valentini (Eds.), *Africa and Carbon Cycle. World Soil Resources Reports* No. 104: 105 – 113. FAO, Rome.
- Asare, Rebecca Ashley. 2010. Implications of the Legal and Policy Framework for Tree and Forest Carbon in Ghana: REDD Opportunities Scoping Exercise. Forest Trends: Washington, DC.
- Centre for Policy Analysis (CEPA), 2000. Selected Economic Issues No. 3. Soil Classification in Ghana. Henry Obeng.
- CSIR Water Research Institute, (2000). *Water Resources management Problems Identification, Analysis and Prioritisation Study*.
- Davies, J. & C. Awudi. 2001. Review of reform of fiscal policies affecting forest management in African ACP countries.
- Ghana Green economy, Scoping Study-Draft, UNEP.
- Ghana FIP Final, October 2012.
- Ghana Forest Report –draft, towards Ecowas Convergence Plan, prepared by Prof. K. Tufour, March 2012.
- Hall, J.B. & M.S. Swaine .1981. Distribution of ecology of vascular plants in a tropical rain forest; forest vegetation in Ghana. Dr W Junk Publishers. 383 pp.
- Hansen C.P., J.F. Lund & T. Treue. 2009. Neither fast nor easy: the prospect of Reducing Emissions from Deforestation and Degradation (REDD) in Ghana. *International Forestry Review* Vol.11 (4).
- Katoomba Group West Africa Incubator, Nature Conservation Research Centre, Oxford University & Ghana Forestry Commission. 2011a. Biomass Map of Ghana 2008 – 2009. (Available at: [http://forest-trends.org/publication\\_details.php?publicationID=2837](http://forest-trends.org/publication_details.php?publicationID=2837).)
- Katoomba Incubator for Ecosystem Services, Nature Conservation Research Center, Oxford University, National Aeronautics and Space Administration, & Ghana Forestry Commission. 2011b. The Ghana Carbon Map: Potentials, Opportunities and Implications. Unpublished Working Paper.
- Marfo, E. 2010. Chainsaw Milling in Ghana - context, drivers and impacts. Tropenbos International, Wageningen. 63 pp.
- Marfo, E., E. Danso and S.K. Nketiah. 2013. *Analysis of linkages and opportunities for synergies between FLEGT, REDD and national forest programme in Ghana*. Wageningen, the Netherlands: Tropenbos International Ghana.
- Ministry of Lands and Natural Resources (2012). Ghana forestry investment program (FIP) Plan –draft report, April 2012
- Ministry of Lands and Natural Resources (2012). Climate Investment Funds, Ghana Investment Plan for the Forest Investment Program (FIP) October 2012.
- Rice, R.A. & Greenberg, R. 2000. Cocoa cultivation and the conservation of biological diversity. *Ambio* 3 (29): 167 – 173.
- Road Map, Mainstreaming Gender considerations into REDD+ processes in Ghana, IUCN/WEDO/PDA, November 2011.

Report on REDD+ and CDM Sensitization Workshop for Forestry Commission frontline Staff in the Greater Accra, Volta, Eastern, Brong Ahafo and the three Northern Regions – FC report.

Report of the Committee of Enquiry into the Grievances of Farmers being ejected from certain Forest Reserves in the Western Region, November 1974

Republic of Ghana. 2010. Ghana Shared Growth and Development Agenda (GSGDA) 2010 – 2013. Medium-Term National Development Policy Framework. National Development Planning Commission, Government of Ghana, Accra.

Republic of Ghana. 2011c. Tree crops policy (final draft). MoFA, Government of Ghana.

Revised Ghana R-PP, Final December 2010.

Statistics, Research and Information Directorate (SRID). 2001. *Agriculture in Ghana. Facts and figures*. Ministry of Food and Agriculture. Accra. Ghana.

Strengthening off-reserve timber resource management in Ghana, Tropenbos international –Ghana Workshop Proceedings 7, TBI-Ghana 2009.

Technical Training and Roundtable Discussion on REDD+ and Implementation Modalities for Traditional Chiefs, Demonstration Project Proponents and Senior Personnel of Forestry Commission, *NCRC, August 2012*, John Mason and Rebecca Asare, with input from Martin Yelibora and Winston Asante.

United Nations (2004) Freshwater Country Profile (Ghana)

Voluntary Partnership Agreement between the EUROPEAN COMMUNITY and the REPUBLIC OF GHANA on Forest Law Enforcement, Governance and Trade in Timber Products into the Community

World Bank. 2012a. Cocoa sector policy brief. PREM Africa Region. World Bank, Washington DC.

World Bank .2011a. Countries, Ghana: Data and Statistics. World Bank, Washington D.C.

World Bank. 2011b. Supply chain risk assessment. Cocoa in Ghana. World Bank, Washington DC.

World Bank. 2010. Tackling Poverty in Northern Ghana. World Bank, Washington D.C.

World Bank. 2005. Ghana natural resources management and growth sustainability. World Bank, Washington D.C.

WRC 2010. National Baseline Studies and Institutional analyses towards the development of the national IWRM Plan. Prepared by SAL Consult Ltd for WRC.

**ANNEXES**

Annex 1	SESA Terms of Reference
Annex 2	Final Revised SESA Work Plan
Annex 3	List of stakeholders initially contacted
Annex 4	Initial Stakeholder Engagement Report
Annex 5	Spatial Analysis and GIS Maps
Annex 6	Case Study Report
Annex 7	Regional Workshops Report
Annex 8	SESA Validation invitation letter and list of Participants at Validation Workshop
Annex 9	World Bank comments on the 2014 SESA Report

**Annex 1      SESA Terms of Reference****TERMS OF REFERENCE****STRATEGIC ENVIRONMENT AND SOCIAL ASSESSMENT FOR THE REDD+ MECHANISM IN GHANA**

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**1.0      INTRODUCTION**

Reducing Emissions from Deforestation and Forest Degradation (REDD+) is a proposed global mechanism to mitigate climate change, while mobilizing financial resources for socio-economic development in forest countries. The Forest Carbon Partnership Facility (FCPF), facilitated by the World Bank, brings together 50 donor and forest country participants with the aim of supporting the forest countries in the preparation and subsequent implementation of their REDD+ Strategies.

Ghana is a key participant country in the FCPF and the Government is currently implementing its Readiness Preparation Proposal (R-PP) with regards to the REDD+ Readiness phase, and has requested a FCPF Readiness Preparation Grant to support the design of its REDD+ Strategy. This Strategy aims to control deforestation and degradation in order to reduce green house gas emissions into the atmosphere.

Strategic environmental and social assessment (SESA) is a key component of Ghana's Readiness Preparation Proposal (R-PP) to the Forest Carbon Partnership Facility (FCPF). The SESA is part of the phased approach of the FCPF Readiness Mechanism. The SESA is consistent with the Strategic Environmental Assessment (SEA) approach applied by the Ghana Environmental Protection Agency.

**1.2      Study Objectives**

The overall objective is to ensure that Strategic Environmental and Social Assessment (SESA) can be applied to integrate environmental and social considerations into Ghana's REDD+ readiness process in a manner consistent with Ghana's environmental laws and regulations and the World Bank's environmental and social safeguard policies.

In accordance with FCPF guidelines, special consideration should be given to livelihoods, rights, cultural heritage, gender, vulnerable groups, governance, capacity building and biodiversity.

**1.3      Drivers of deforestation and forest degradation**

In Ghana, the problem is essentially one of gradual degradation rather than deforestation, and is incremental rather than dramatic, with no single dominant driver. The underlying causes are those typical of forest degradation in the more heavily populated countries of the tropics, and involve a complex of demographic, economic and policy influences. The immediate drivers include: policy/ market failures in the timber sector; burgeoning population in both rural and urban areas, which increase local demand for agricultural and wood products; high demand for wood and forest products on the international market; heavy dependence on charcoal and fuelwood for rural and urban energy; limited technology development in farming systems, and the continued reliance on cyclical 'slash and burn' methods to maintain soil fertility. The prominence of one forest crop in the national economy (cocoa), and recent varietal changes (industrial and artisanal/small scale) is a concern in some areas, as is the use of fire in livestock management. These drivers, which are fully discussed in the REDD+ Readiness Preparation Proposal and will be revisited during the preparation of the REDD+ strategy, are summarised below:

Policy drivers

Imbalances of forest exploitation in favour of large scale timber industry  
Under priced goods and services  
Weak regulatory mechanisms and resource rights  
Weak law enforcement

Demographic drivers

Population growth and urban expansion

Slash and burn agricultural practices

Economic drivers

High international demand for primary products

Low prices for lumber on the domestic market

Natural forces

Wild fires

Floods

Pests and diseases

**1.4 REDD+ strategy options**

Addressing deforestation and forest degradation presents a number of challenges in Ghana, though success in REDD+ policy making would offer significant benefits for the society not only in the area of carbon emissions reductions but also in relation to biodiversity conservation, forest industry, agriculture and livelihoods. Below is a list of proposed strategy options for addressing the preliminary identified drivers, according to the R-PP:

- Improve participation of stakeholders in policy dialogue and decision making
- Clarify natural resource rights
- Improve forest law enforcement, governance and trade
- Rehabilitation of degraded forest reserves
- Forest plantation development
- Promoting REDD+ friendly cocoa
- Improve productivity of farmlands
- Strengthened decentralised management of natural resources
- Sustainable fuel wood production and improved efficiency of fuel wood use
- Supply wood legally to the domestic market

**1.5 Links between the SESA and the REDD+ strategy options**

The SESA contributes to the REDD+ Readiness process in Ghana in two ways. First, it helps to refine the REDD+ strategy options by assessing how REDD+ strategy options address environmental and social priorities associated with current patterns of land use and forest management. Gaps identified through the assessment would lead to adjustments in the REDD+ strategy options to close the gaps. Second, the SESA would produce an Environmental and Social Management Framework that will outline the procedures to be followed for managing potential environmental and social impacts of specific policies, actions and projects during the implementation of the REDD+ strategy that is finally selected.

The SESA will integrate environmental and social considerations in the REDD+ strategy options and will provide a framework for managing potential environmental and social impacts associated with the implementation of these strategy options through the combination of analytical work, consultation and public participation. The RFP has provided a schematic diagram of SESA which summarises the Ghana's approach for sectoral SEA that comprises five steps: preparation/ screening, scoping, assessment, monitoring and evaluation, and reporting. Consistent with these steps, the SESA for the REDD+ readiness process is also summarized in the RFP. Monitoring and evaluation procedures (step 4 of the Ghana's approach to sectoral SEA) are included in the preparation of the ESMF.

**1.6 Stakeholder Gap Analysis**

During the preparation of the R-PP, extensive stakeholder analysis was carried out to identify key stakeholders. Notwithstanding, the Consultant at the start of the assignment will conduct a stakeholder gap analysis to identify any relevant stakeholders that might not have been considered during the R-PP development phase. Important among them are community level representatives, chiefs and land owners, local, regional and national organizations, and women's organizations.

### **1.7 Preparation of Consultation and Participation Plan**

The consultant will prepare a comprehensive set of consultation and participation activities for the SESA based on these ToR, a review of the consultation and participation plan prepared during the development of the R-PP, a review of the consultation and participation experience of the Voluntary Partnership Agreement (VPA) and other experiences and literature which may be relevant for the Ghana context.

In carrying out this activity, the consultant will ensure that these activities are in line with the Consultation and Participation Master Plan (and Framework) of the REDD+ readiness process. The consultant will coordinate as needed with other teams assisting the government of Ghana in the implementation of the Master Plan.

#### National Validation Workshop

The Consultant will prepare a SESA work plan, which will include the consultation and participation activities of the SESA. The SESA work plan shall be subjected to broad stakeholder validation in a national workshop. The validation workshop is crucial in defining the legitimacy of all subsequent stakeholder consultation and participation processes. Existing platforms and all key stakeholder groups related to forest management in Ghana will therefore be considered. Ample notice will be given to stakeholder groups and platforms who, as much as possible, will nominate their own representatives.

The workshop will be held in a place which is readily accessible to the stakeholder groups coming from different parts of the country. The format and facilitation of the workshop will also ensure that all stakeholders feel comfortable to voice their concerns and that all voices are heard and all inputs considered. Among the issues to be discussed will include the legitimacy and representativeness of stakeholder groups as well as mechanisms for feed back in the SESA process. Criteria for including new stakeholders in future consultation and participation activities will be also agreed as well as the rules to be followed to reach agreements along the SESA process. Views, comments and agreements from the Validation workshop will be used by the consultants to finalise the SESA work plan. The Plan and any other outcomes of the workshop will be publicly disclosed via the websites of the Forestry Commission, the EPA and Lingo websites. To reach out to local communities, a plan summary will be communicated by radio in a culturally sensitive format.

### **1.8 Identification of key environmental and social issues**

The consultant will identify key environmental and social issues associated with deforestation and forest degradation in Ghana to inform the selection of environmental and social priorities. This proposed identification of key issues will be based on analytical work using

- spatial analysis,
- case studies and
- participatory rural appraisal methods.

Spatial analysis will be applied in mapping and for overlaying different sets of information to identify critical areas of concentration of environmental and social issues. We shall involve national institutions like CERGIS at the University of Ghana, Legon to provide support in terms of background data and mapping. Case studies will be used to show opportunity costs of different land uses including environmental and ecosystems valuation. Case studies will also help to dig deeper into key issues, inter-



sectoral linkages, and potential policy trade-offs in key areas. Participatory rural appraisal will be the main vehicle for identifying key environmental and social issues at the community level.

For scoping key environmental issues, the following steps will be followed:

- Construction of a base map (first layer), using information on forest cover, river basins, water bodies and salient biodiversity characteristics, including biodiversity hotspots and protected areas;
- Mapping of main economic activities in forest areas and surrounding including but not limited to logging, farming, agriculture, mining and tourism. The mapping will include information on geological provinces and main production projects under implementation or likely to be implemented in the following 5 years (second layer)
- Mapping of existing infrastructure and identification of proposed road, rail and power projects under investigation or implementation (third layer)
- Superimposition of these three layers of information to define critical areas under or potential environmental stress in forest areas;
- Examination of specific environmental issues by using participatory rural appraisal methods and case studies agreed with the Forestry Commission in selected areas of interest.

Likewise the following steps will be followed to scope the key social issues:

- Construction of base map (first layer) of communities in and around forest areas, including key demographic indicators such as number of inhabitants, gender and age structure, and ethnicity of the populations;
- Poverty and vulnerability map including income levels of the population (second layer);
- Mapping of access and land tenure rights that will include concessions or other existing titling rights for natural resources or extractive industries such as mining (third layer)
- Superimposition of these three layers of information to define critical social issues on forest areas;
- Examination of specific social issues by using rural appraisal methods and case studies to document critical interactions and synergy of these different social factors affecting sustainable forest management in Ghana

Building on the evidence and results of these analyses, we will produce a scoping report of key environmental and social issues in forest areas in Ghana. The report will:

- Identify environmental and social hotspots and discuss their main characteristics
- Discuss in a sample of key forest areas land use trade-offs by analyzing the opportunity cost of conserving forest versus developing these areas into alternative land uses such as mining or agriculture; and
- Analyse critical institutional, legal, regulatory, policy and capacity gaps underlying the key environmental and social issues identified

The scoping report will inform the public consultations to be undertaken with key stakeholders for the selection of the SESA's environmental and social priorities.

### **1.9 Selection of environmental and social priorities**

In line with the consultation and participation plan of the SESA, the key environmental and social issues resulting from the mapping and analytical work will be reviewed and prioritized by a representative sample of communities in the critical areas identified from the mapping exercise. Stakeholder engagement at this level will be in the most widely spoken national dialect of the area. The prioritization will then be validated at the regional level by community representatives, and the District Forest Forums.

In parallel, institutional stakeholders identified in the SESA work plan such as research and academia, Environmental Protection Agency, Lands Commission, Forestry Commission, Minerals Commission, Water Resources Commission, National Coalition on Mining and other Civil Society Coalitions on environment

and natural resources management and the private sector will review and prioritise environmental and social issues through consultation that are culturally sensitive like focus groups.

A national workshop will be convened to discuss the results of the prioritization undertaken by the institutional stakeholders to reach a common set of priorities agreed by all institutional stakeholders at the national level (including the National REDD+ Technical Working Group and the National Forest Forum). The selected environmental and social priorities of institutional stakeholders and those of the forest communities will be reported either separately, if they are different from each other, or integrated into one set of priorities for the communities and institutional stakeholders, if they are similar or identical.

The consultant will prepare a report on the selection of priorities by the SESA stakeholders. The report will then be publicly disclosed via the websites of the Forestry Commission and the EPA. It will also be published at the Lingo website and the infoshops of Forestry Commission as well as in the Talking Drum ([www.thetalkingdrum.com](http://www.thetalkingdrum.com))

#### **1.10 Assessing candidate REDD+ strategy options vis-à-vis SESA's priorities**

The consultant will assess the extent to which candidate REDD+ strategy options may address SESA's environmental and social priorities and take into account in their formulation the opportunity costs of forests. When the REDD+ strategy options address partially or do not address some of the priorities and/or are unresponsive to forest opportunity costs, the gaps will be identified and specific recommendations will be made to refine the REDD+ strategy options to close these gaps. In this way, priority environmental and social considerations and to some extent forest valuation will be integrated into the preparation of the REDD+ strategy.

#### **1.11 Validation of the assessment**

We shall liaise with the team in charge of preparing the REDD+ strategy to subject the refined REDD+ strategy options to a national validation workshop. Participants from all key stakeholders will be invited to this workshop including those whose work/ livelihoods are likely to impact on or be impacted upon by the strategy options. Care will be taken to include women, migrant farmers and small scale practitioners and any otherwise marginalized groups in line with the consultation and participation plan of the SESA. The Validation workshop will be organized in such a way that there will be parallel validation by the different key stakeholders, before a plenary session. This will empower 'weaker' stakeholders by ensuring they have a chance to freely express and promote their views. Where necessary, a local dialect will be used in the stakeholder specific session, to allow for proper articulation of concerns by all key stakeholders.

#### **ESMF**

The revised REDD+ strategy options shall be assessed against the environmental and social impacts that they may induce or create during their implementation. These environmental and social impacts will be identified vis-à-vis the World Bank environmental and social safeguard policies. For example, one of the REDD+ strategy options may induce involuntary resettlement of forest communities and farmers located in a specific region of Ghana which will trigger World Bank OP4.12. In such a situation, the consultant will provide recommendations to refine further the REDD+ strategy options in order to eliminate or minimize this risk. If some residual risks still remain, these will be dealt with in the Environmental and Social Management Framework (ESMF) and Resettlement Policy Framework (RPF) prepared to manage risks during the implementation of the REDD+ strategy.

The consultant will prepare an initial draft ESMF suitable for disclosure and public consultations that would involve the following minimum tasks:

- A description of the indicative REDD+ strategy options, its main social and environmental considerations, and the various risks involved in its implementation
- An outline of the legislative, regulatory, and policy regime (in relation to forest resources management, land use, community customary rights etc) that the strategy will be implemented within, drawing from the information available from the draft REDD+ strategy to be provided by the REDD+ technical working group;
- A description of the potential future impacts, both positive and negative, deriving from the project(s), activity (ies) or policy (ies)/ regulation(s) associated with the implementation of the REDD+ strategy options, and the geographic/spatial distribution of these impacts;
- A description of the arrangements for implementing the specific project(s), activity(ies) or policy(ies)/ regulation(s) with a focus on the procedures for (i) screening and assessment of site- specific environmental and social impacts, (ii) the preparation of time- bound action plans for reducing, mitigating, and/or offsetting any adverse impacts, (iii) the monitoring of the implementation of the action plans, including arrangements for public participation in such monitoring;
- An analysis of the particular institutional needs within the REDD+ implementation framework for application of the ESMF. This will include a review of the authority and capability of institutions at different administrative levels (eg. local, district, regional and national), and their capacity to manage and monitor ESMF implementation. The analysis will draw mainly from the REDD+ implementation framework of the draft REDD+ strategy;
- An outline of recommended capacity building actions for the entities responsible for implementing the ESMF
- Requirements for technical assistance to public and private sector institutions, communities, and service providers to support implementation of the ESMF
- An outline of the budget for implementing the ESMF.

The final draft ESMF suitable for inclusion in the R- Package will contain specific sections addressing the requirements of applicable World Bank safeguard policies, including as relevant:

- Environmental Management Framework to address any potential environmental impacts, including cumulative and/ or indirect impacts of multiple activities;
- Involuntary resettlement and/ or restriction of access to natural resources having adverse livelihood impacts (eg. Process Framework);
- Stakeholder engagement and dispute resolution framework.

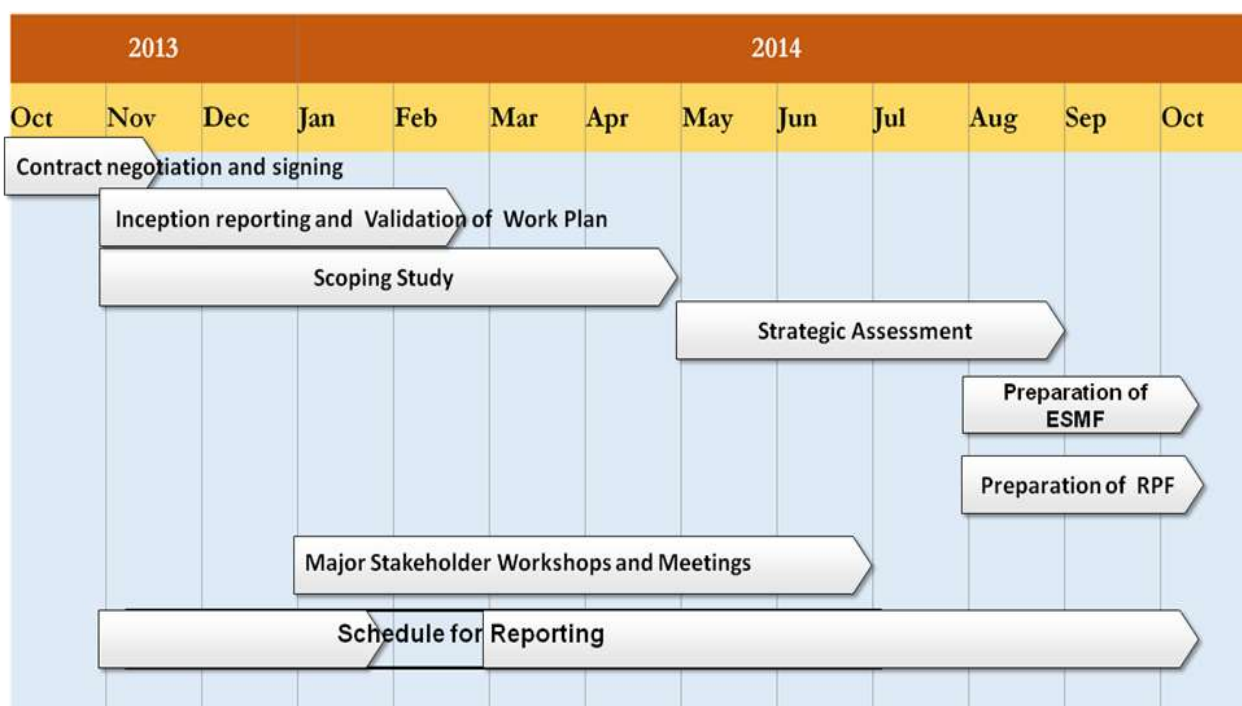
#### Consultation on and disclosure of the ESMF and RPF

The generation of draft ESMF and RPF needs to be preceded by the preparation of the ESMF/ RPF ToR for which inputs will be solicited through their public disclosure. In putting together the draft ESMF and RPF, extensive stakeholder consultation will be done, particularly in the critical areas as identified through the prioritization and mapping exercise. The draft documents will also be subjected to broad stakeholder consultations and inputs. Eventually, a representative sample of communities in the critical areas will be enabled to participate in a public hearing on the ESMF and RPF which will be held in a readily accessible community or district capital. Community- based organizations and NGOs operating in these areas will participate in the public hearing., which will also be held in the local dialect widely spoken in the specific area. Special efforts will be made to engage the respective House of Chiefs separately.

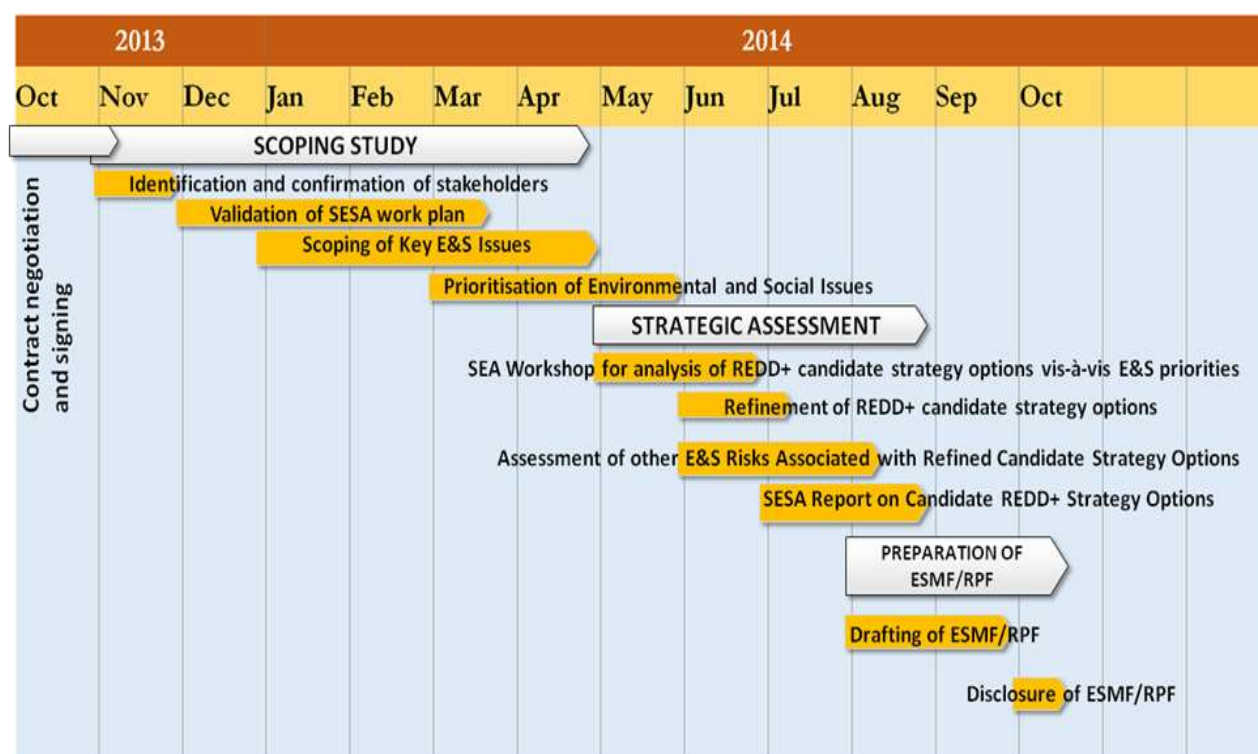
Consultation and participation for the SESA will include consultations of the ESMF and RPF which should involve community and institutional stakeholders in a manner consistent with Ghanaian Law and the World Bank safeguard and disclosure policies. Copies of the documents will be made available to the public through the websites of the EPA and Forestry Commission, World Bank, Lingo and the Talking Drum. Hard copies will be available at EPA offices and the District Assemblies of the identified critical areas. Copies will also be sent to relevant public sector institutions, civil society and the private sector to solicit input and comments.

## Annex 2 Final Revised SESA Work Plan

## REVISED SUMMARY WORK PLAN



## DETAILED WORK PLAN



**Annex 3 List of stakeholders initially contacted****WESTERN REGION**

Contact person	Position	Contact number	Date
<b>Forestry Service Division (FSD), Takoradi</b>			
Mrs Lydia Opoku	Regional Manager		18-03-2014
Emmanuel Yeboah	Assistant Regional Manager	0200373979	
Samuel Agyei-Kusi		0270454066	
Augustine Gyedu	Assistant Regional Manager	0208170822	
S. A. Nyantakyi	Assistant District Manager	0243102830	
<b>Wildlife Division, Takoradi</b>			
Felix Nani	Acting Manager	0206289085	19-03-2014
<b>Wildlife Ankasa Camp, Elubo</b>			
Ezekiel Bannyemanyea	Community Affairs	0207601311/0245852247	19-03-2014
Bismark Ackah	Registry	0206770907	
Bona Kyiire	Assistant Wildlife Officer	0244505192	
Papa Kwao Quansah	Tourism Officer	0205957949	
<b>Enchi, Aowin District</b>			
Mr. Fosu Lawrence	FSD, District Manager	0244581957	20-03-2014
Mr. Okyere Darko	OASL, District Officer	0244241034	21-03-2014
Mr. Oduro Boampong	Aowin District Assembly-DPO	0244830698	21-03-2014
Mr. Yaw Adu	MOFA, District Director	0249105224	21-03-2014
Mr. Felix Appiah	District Cocoa Officer CSSVD/Extension	0203733102	21-03-2014
<b>Sefwi Wiawso Municipal</b>			
Mr. Samuel Obosu	SWMA-MPO	0244433031	24-03-2014
Mr. Andrew Ackah	OASL-Municipal Officer	0243684078	24-03-2014
Mr. Issah Alhassan	CHRAJ-Municipal Officer	0240195541	24-03-2014
Mr. Samuel Amponsah	COCOBOD-Regional CSD Head	0244560785	24-03-2014
Mr. George Dery	FSD-District Manager	0244684857	
Mr. Justice Niyuo	FSD Assistant District Manager	0242171767	24-03-2014
<b>Timber Industry Development Division (TIDD), Takoradi</b>			
Dr. Benjamin Donkor	Executive Director	0203893725	26-03-2014
Mr. Yaw Kumi	Contracts & Permits Manager	0244503857	
Mr. Faakye Collins	Timber Grading & Inspection Manager	0208135037	
Mr. Peter Zomelo	Trade & Industry Development Manager	0244376246	

**Jomoro District**

Amokwah CREMA

Date: 21-03-2014

1. Paul Kodjo, Chairman, 0208412085
2. Ama Foriwaa, Executive member, 0209874607
3. Barima Moro, Executive member, 0209167883

**Nsuano Community**

Date: 21-03-2014

No.	Name	Position/Designation	Age	Occupation
1	John Amponsah	CEC Secretary	58	Farmer
2	Nana Mbala	Chief of Nsuano		Farmer
3	Samuel Akowa	Chief-Tenant farmers		Farmer
4	Francis Amo	Youth Leader		Farmer
5	Lolonyo			Farmer

6	Kofi Kusase			Farmer
7	Agyemang Nketia	Elder/Opinion Leader		Farmer
8	Ewoku Ndele	Linguist		Farmer
9	Nuro James		37	Farmer
10	Collins Coffie		22	Farmer
11	Sampson Kombate		32	Farmer
12	Issa Alhassan		41	Business man
13	Kwabena Peter		34	Farmer
14	Yaw Abanga		31	Farmer
15	Appiah Josh		34	Farmer
16	Ohene George		33	Farmer
17	Zufura Seidu		43	Farmer
18	Musah Anbela		48	Farmer
19	Opanin Samuel Obuobi		60	Farmer
20	Kwame Manu		38	Farmer
21	Nana Yaw	Ahohohene	59	Farmer
22	Robert Gyimah		46	Farmer
23	Augustine Tawiah		34	Farmer
<i>Women</i>				
1	Beatrice Afrifa		28	Trader
2	Patricia Amedi		22	Trader
3	Grace Anamba		42	Farmer
4	Charlotte Amponsah		33	Business woman
5	Irene Amedi		26	Business woman
6	Diana Nyuenmawor		25	Farmer
7	Ama Musah		42	Farmer
8	Christina Ehimaa		35	Farmer
9	Vida Nyarko		45	Farmer
10	Faustina Anaaba		24	Farmer
11	Margaret Fouaa		32	Farmer
12	Akua Abulaih		24	Farmer
13	Faustina Ohenewaa		39	Farmer
14	Rashalutu Alhassan		45	Farmer
15	Hawa Groma		65	Farmer
16	Faustina Afia Nyamekye	CEC Treasurer	53	Farmer/Business woman
17	Sophia Ackah		51	Farmer/Business woman

**Sefwi Wiawso District**

Akurafo Community

Date: 22-03-2014

No.	Name	Position/Designation	Age	Occupation
1	Atta Kofi		48	Suhuma Timber Co
2	Nana Yaw Fosu	Nkosohene	40	Farmer
3	Yaw Gyabeng		60	Farmer
4	Christiana Owusu		54	SPU-Cocobod
5	Hannah Mesumekyere		70	Farmer
6	Ama Konadu		67	Farmer
7	Joseph Boakye		45	Storekeeper
8	David Nsowah		85	Farmer
9	Osumanu Mohammed		35	Farmer
10	Lardi Adu		60	Farmer
11	Seidu Patron		49	Farmer
12	Opong Frimpong		35	SPU-Cocobod
13	Isaac Sampa	Assemblyman	35	SPU-Cocobod



14	Joseph Sarkodie		40	Farmer
15	Osuman K. Oppong		73	Farmer
16	Thomas Sampa		25	Farmer
17	Kofi Abudu		48	Farmer
18	Kwame Sumaila		35	SPU-Cocobod
19	Yaa Mary		31	Farmer
20	Felicia Nsowah		36	Farmer
21	Adama Asante		82	Farmer
22	E. A. Sampah		72	Farmer
23	Mary Armah		70	Farmer
24	Nicholas Armah		68	Farmer
25	Samuel K. Baah		60	Farmer
26	Gidi Kwesi		29	Farmer
27	Amina Attah		106	Farmer
28	Kwame Owusu		45	CSSCD
29	L. B. Kuranteng		64	Farmer
30	Emmanuel Abusale		45	Farmer
31	Sapato Ocloo		51	Agriculturalist
32	Asuntaaba Atingah		35	Farmer
33	Inusah Mohammed		54	Agriculturalist
34	Edward Mensah		16	Pupil
35	Sampa Daniel		18	Mechanic
36	Emmanuel Tuona		20	Mechanic
37	Abdela Mohammed		18	Pupil
38	Kofi Gyamfi		31	Farmer
39	Ebenezer Coffie		26	Farmer

## Kunuma community

Date: 24-03-2014

No.	Name	Position/Designation	Age	Occupation	Phone contact
1	Bona Isaac		39	Teacher	0242541653
2	Kyere Dacosta		26	Farmer	0248994346
3	Opoku Antwi		27	Farmer	0549260706
4	Freeman Dollar		54	Farmer	0246519040
5	Nana Boamah	Reagent	70	Farmer	
6	Abu Sulam	Assemblyman	46	Farmer	0240849350
7	Osei George	Unit Committee member	40	Farmer	0241988330
8	Boamah Stephen		30	Farmer	0242072936
9	Mammud Moro		38	Farmer	0240170484
10	Kwasi Badu		64	Farmer	
11	John Azubi		53	Farmer	0543648473
12	Philip Gyabeng		42	Farmer	0243753771
13	Kwasi Ninkyin		35	Farmer	0246559443
14	Appiah Isaac		41	Farmer	0540560701
15	Charles Yaw		37	Farmer	
16	Michael Nkuah		60	Farmer	0247113896
17	Jacob Ackaah		46	Farmer	0548789780
18	Ibrahim Alhassan		39	Farmer	0242549346
19	Naomi Appiah		30	Farmer	0249091093
20	Agatha Kwesi		67	Farmer	
21	Ama Antobam		67	Farmer	
22	George Opoku Mensah		47	Driver	
23	Amoah Johnson (K.O)		47	Farmer	
24	Adu Frimpong		50	Farmer	

25	Opanyin Kwame owusu		89	Farmer	
26	John Boadu		59	Farmer	
27	Paul Yeboah		47	Farmer	
28	Kwadwo Nyarko		56	Farmer	
29	Anthony Osei		27	Farmer	
30	Joseph Alhassan		32	Farmer	
31	Elder Asiedu		64	Farmer	0249233768
32	Kwabena Kra		42	Farmer	0541784659
33	Kwadwo Fodwo		70	Farmer	
34	Vincent Kwarteng		29	Farmer	0246831047
35	Gyabeng Daniel		31	Farmer	
36	Attah Kofi		45	Farmer	
37	Thomas Baidu		57	Farmer	
38	Teacher Attah		55	Teacher/Farmer	
39	Kwabena Prah		39	Farmer	
40	Teacher Amoah		54	Teacher/Farmer	0248694596
41	Kofi Oduro		31	Farmer	0248907968
42	Kwabena Abokye		39	Farmer	0209285024
43	Asumang Adu Benedict		26	Farmer	0240877735
44	Sulley Mbugre		42	Farmer	0245128446
45	Asante Richmond		29	Farmer	0244562794
46	Musah Gjaro		70	Farmer	
47	Rebecca Kyei		35	Farmer	0274386626
48	Cecilia Mensah		42	Farmer	
49	Charity Afful		25	Farmer	
50	Grace Brun		45	Farmer	
51	Agnes Asoh		45	Farmer	
52	Alimatu Gjaro		27	Farmer	
53	Akosua Boatema		45	Farmer	
54	Mercy Oduro		26	Farmer	
55	Akosua Vivian		30	Farmer	
56	Adwoa Broni		55	Farmer	
57	Gloria Fosuah		36	Farmer	
58	Cynthia Yeboah		29	Farmer	
59	Theresa Nsiah		40	Farmer	
60	Vivian Owusu		43	Farmer	
61	Abena Gyaako		32	Farmer	
62	Margaret Opoku		52	Farmer	
63	Nana Ama		33	Farmer	
64	Akyaa Nyame		45	Farmer	
65	Zinabu Lareba		40	Farmer	
66	Abena Badu		29	Farmer	
67	Georgina Mensah		30	Farmer	
68	Charlotte Asante		22	Farmer	0540827119
69	Yaa Tano		25	Farmer	0548757849
70	Serwaah Mokuah		38	Farmer	
71	Faustina Opoku		37	Farmer	0242262780
72	Mary Nkrumah		55	Farmer	
73	Grace Mensah		30	Farmer	
74	Dede Faustina		30	Farmer	
75	Ama Nyame		70	Farmer	
76	Mary Agyeman		26	Farmer	

**CENTRAL REGION**

Contact person	Position	Contact number	Date
<b>Assin Fosu District</b>			
Mr. Kyei Samuel	FSD-District Manager	0248991337	25-03-2014
Mr. Nifaa Boyir Chrisantus	FSD-Assistant District Manager	0208988256	25-03-2014
Rose Adjei Okyere	FSD-Technical Officer/Ranger		25-03-2014
Mr. Jonathan McCarthy	MOFA-Extension Officer	0242211477	25-03-2014
Mr. Samuel Bawah	MOFA Crops Officer	0244946406	25-03-2014
Mr. Samuel Kwakye	Project Coordinator-Oasis Foundation International	0264057217	25-03-2014
Mr. Yaw Ansah	Chairperson-Artisanal Sawn Mill Association	0247101421	25-03-2014
Mallam Yahaya	Member/Truck Driver-Artisanal Sawn Mill Association	0540583786	25-03-2014
S. K. Boafo	Member- Artisanal Sawn Mill Association		25-03-2014
<b>Cape Coast</b>			
Mr. Asiedu Okrah	FSD-District Manager		
Mr. Daniel Adjei	FSD-Asst district manager		
Ms Eunice Ompon Peprah	FSD-District Range supervisor	0272847785	
Ms Christie Ofoe Tsatsu	FSD-District Ranger supervisor	0244590475	
Mr. Solomon Bagasel	FSD-District Customer service	0208291000	
Mr. Alex Oduro Barnie	FSD-Regional Manager		

**ASHANTI REGION**

Contact person	Position	Contact number	Date
<b>FSD, RMSC, TIDD Kumasi</b>			
Isaac Noble Eshun	Assistant FSD Regional Manager	0243556188	09-04-2014
Alexander Boamah Asare	Manager, Collaborative Forest Management, CRMD-RMSC	0208149194	10-04-2014 11-04-2014
Isaac Buckman	TIDD, Contract & Permit Officer	0242312630	10-04-2014
Antony Amamoo	TIDD, Regional Manager	0208142192	11-04-2014
<b>FORIG, Kumasi</b>			
Dr. Emmanuel Marfo	Senior Research Scientist- Policy & Governance	0244627274/ 0264627274	09-04-2014
<b>Tropenbos International (TBI)-NGO</b>			
Bernice Agyekwena	Communication Officer	0276478083	09-04-2014
K. S. Nketia	Project Director	0208150148	10-04-2014
<b>OASL, Kumasi</b>			
Nana Nsuase Poku Agyeman III	Regional Stool Lands Officer/ Otumfuo's Akyeamehene/ Chief Linguist	0244461057	09-04-2014
<b>Land Commission, Kumasi</b>			
Afia Abrefa	Senior Lands Officer-PVLMD	03220-26402	09-04-2014
Benjamin Nti	Lands Officer- PVLMD		
A. Karikari	Divisional Head-Land Registration Division, Ashanti Reg	02033221111	10-04-2014
<b>Institute of Renewable Natural Resources - KNUST</b>			
Dr. Emmanuel Acheampong	Senior Lecturer		10-04-2014
<b>Form Ghana</b>			
Marius Krijt	Operations Manager	0544441441	
Mariam Awuni	HR & Development Manager	0266374047	

**BRONG AHAFO REGION**

Contact person	Position	Contact number	Date
<b>Goaso</b>			
Joseph Bempah	FSD District Manager	0244804624	12-04-2014
Edward Nyamaah	Forester/ Range Supervisor	0243462897	12-04-2014
<b>Kintampo</b>			
Edward Opoku Antwi	FSD District Manager	0244043657	14-04-2014
Samuel Abisgo	DPO-Kintampo South D. A.	0208288577	14-04-2014
<b>Sunyani</b>			
Mariam Awuni	Form Ghana - HR & Development Manager	0266374047	15-04-2014
Isaac Kwaku Abebrese	Dean-School of Natural Resources-University of Energy & Natural Resources	0200863738/ 0277825094	15-04-2014
Dr (Mrs) Mercy A. A. Derkyi	Lecturer (NRM governance, policy and conflict management-Dept. of Forest Science, University of Energy & Natural Resources	0242186155	15-04-2014
Clement Amo Omari	FSD Assistant Regional Manager	0244549463	15-04-2014
Geoffrey Osafo-Osei	OASL-Regional Stool Lands Officer	0243536375	16-04-2014
Daniel Acheampong	OASL-Assistant Regional Officer	0246375788	16-04-2014
Nat Opoku Tandoh	OASL- Accountant	0209153153	16-04-2014
I.K.A Baffor Anane	Department of Community Development - Regional Director	0208162334	16-04-2014

**Boadikrom settlement, Ayum Forest Reserve, Goaso Forest District**

12-04-2014

No.	Name	Position/Designation	Occupation
1	Abdulai Alhassan	-	Farmer
2	Kobina Mensah	-	Farmer
3	Kwame Matthew	-	Farmer
4	Sika Sanvia	-	Farmer
5	Daniel Boadi	Odikro/ 0205253201	Farmer

**Akwaboa No. 2 Community, Ayum Forest Reserve, Goaso Forest District**

12-04-2014

No.	Name	Position/Designation	Age	Occupation
1	Yaw Amoah		58	Marketing clerk
2	Abu Samual		29	Farmer
3	Kwasi Basare		61	Farmer
4	Adams Fuseini		21	Student
5	Akwasi Addai		35	Farmer
6	Nii Ogye		50	Farmer
7	Isaac Tetteh		10	Student
8	Kwame Amagro		40	Farmer
9	Dogo Busanga		85	Farmer
10	Nana Beng		75	Farmer
11	Yakubu Adams	Chief's spokesman	40	Farmer
12	Emmanuel Tetteh		60	Farmer
13	Osei Tutu Kontre	Opinion Leader	54	Farmer (0203737205)
14	Nana Akwasi Badu	Chief		Farmer
15	Akwasi Agoda		38	Farmer
16	Mohammed Lamini		34	Farmer
17	S. B. Emini		57	Teacher
18	Osei Prince		24	Student
19	Boateng		20	Student
20	Ali Mohammed		23	Student

21	Kwame owusu		14	Student
1	Charlotte Atawiah		22	Farmer
2	Alberta Adampaka		20	Farmer
3	Mary Forkua		24	Farmer
4	Adams Ramatu		20	Farmer/hairdresser
5	Mary Serwah		32	Farmer
6	Ruth Lamisi		37	Farmer/hairdresser
7	Afia Wusuwah		35	Farmer/hairdresser
8	Grace Mansah		52	Farmer/Trader
9	Akua Cecilia		38	Farmer
10	Comfort Asieduwaa		22	Farmer
11	Naomi Odartey		40	Farmer
12	Yaa Comfort		31	Farmer
13	Gladys Brago		32	Farmer
14	Maame Mali		50	Farmer
15	Rita Kondadu	Queen mother	44	Trader
16	Esther Amadu		23	Farmer
17	Abena Leyoma		30	Farmer
18	Janet Yaye		35	Farmer/Trader

Bosomoa Forest reserve, Kintampo Forest District

Nante Community –

14-04-2014

No.	Name	Position/Designation	Age	Occupation
1	Kofi Asante	-	40	Farmer
2	Kwaku Taapen		28	Farmer
3	Pena Daniel		45	Farmer
4	Idrisu Salemana		25	Farmer
5	Adamu Ibrahim		45	Farmer
6	Abukari Sudisu		25	Farmer
7	Yakubu Atteh		21	Farmer
8	Issaka Adam		20	Driver's mate
9	Alhaji Sofo Alhassan	Imam/CFC chairperson	57	Farmer
10	Atta Kofi	Roman Catechist	50	Farmer
11	Kofi Yamawule		30	Farmer
12	Abubakari Bibioboto		28	Driver
13	Yakubu Isahaku		35	Farmer
14	Abubakari Abdul Rahamadu		28	Farmer
15	Abdul Razak Yaya		20	Student
16	K. Asuman		31	Storekeeper/trader
17	Osei Prince		18	Mason Apprentice
18	Rashid Adoku		19	Carpentry apprentice
19	Kwabena Badu		46	Farmer
20	Ibrahim Nuhu		36	Machine operator
21	Gyan Kwame		32	Carpenter
22	Kwaku Gyamfi		25	Driver
23	Kojo Asante		29	Farmer
24	Kojo Damoah		31	Carpenter
25	Tassil Kwabena		27	Bar owner
26	Adu Amponsah	Youth leader	38	Farmer
27	Yaw Apaw		52	Farmer
28	Hon Cpl Gyiwaa		53	Farmer
1	Helena Anane		46	Trader/business woman

2	Naomi Pokua		45	Farmer
3	Akosua Kesewa		41	Farmer
4	Mary Jato		28	Dressmaker
5	Ramatu Mohammed		39	Waakye seller
6	Salamatu Zawe		30	Dressmaker
7	Akua Agness		22	Trader
8	Saah Florence		22	Farmer
9	Georgina Akolowa		40	Yam seller
10	Zamabu Seidu		45	Trader
11	Margaret Adobea		48	Farmer
12	Comfort Dusie		34	Farmer
13	Asin Forsa		40	Farmer
14	Asanjia Doko		40	Farmer
15	Akua Kandusi		38	Farmer
16	Rahinatu Issaku		30	Farmer
17	Tada Benedicta		22	Student
18	Tukusama Rose		20	Dressmaker
19	Akose Churepo		33	Farmer
20	Komeol Akose		28	Farmer
21	Yaa Appiah		40	Farmer
22	Gyasi Emelia		40	Yam seller
23	Afia Angelina		30	Farmer
24	Afia Gyamea		48	Farmer/Trader/Queen Mother
25	Rafatu Muhammed		38	Trader

Krabonso Dagombaline – Kintampo Forest District

14-04-2014

Forest reserve - Bosome

No.	Name	Age	Occupation
1	Potuo Bilaba	65	Farmer
2	Latif Alhassan	18	Farmer
3	Azizu Alhassan	20	Farmer
4	Yaw Sangi	20	Farmer
5	Mohammed	35	Farmer
6	Abduli	35	Farmer
7	Hadi Adama	20	Farmer
8	Yaw Bawuu	30	Farmer
9	Kari Wagi	23	Farmer
10	Dassan Isaac	20	Farmer
11	Yaawuloza Mohammed	20	Farmer
12	Felimon Nubolanaa	20	Farmer
13	Kwabena Dassan	30	Farmer
14	Bawuloma Nubosie	40	Farmer
15	Alahassan Iddrissu	25	Farmer
16	Ibrahim Iddrissu	30	Farmer
17	Zakari Osman	31	Farmer
18	Soribo Alfred	70	Farmer
19	Fusena Iddrissu	80	Farmer
20	Abdulai Tanko	40	Driver
21	Wuudo Ada	55	Farmer
22	Abduliman Ibrahim	56	Farmer
23	Isaah Tayii	20	Farmer
24	Yakubu Idrissu	32	Farmer
25	Abdulai Razak	28	Farmer



26	Amentus Karpiye	65	Farmer
27	Siedu Ibrahim	39	Farmer
28	Latif Alhassan	42	Farmer
29	Jato Dassa	45	Farmer
30	Alidu Kari	32	Farmer
31	Nbuli Dassa	40	Farmer
32	Imoro Mohammed	32	Teacher
33	Isahaku Amadu	25	Farmer
34	Tayii Isaaku	33	Farmer
35	Yamusa Awudu	53	Teacher
36	Bawa Janna	75	Farmer
1	Tikayi Bawa	60	Farmer
2	Lukaya Amidu	40	Farmer
3	Afukyetu Abdulai	40	Farmer
4	Naapo Yeyereku	35	Farmer
5	Alociyo Cynthia	41	Farmer
6	Polina Kando	34	Farmer
7	Faalinbon Akosua	42	Farmer
8	Moolesia Mathew	38	Farmer
9	Kambrenya Selina	39	Farmer
10	Ayesetu Yakubu	44	Farmer
11	Tanpo Daana	38	Farmer
12	Akosua Deri	46	Farmer
13	Afua Abdulai	38	Farmer
14	Latif Ibrahim	39	Farmer
15	Alishetu Mohammed	40	Farmer/NPP Women organiser
16	Ama Ankomah	22	Farmer
17	Janet Dorzea	23	Farmer
18	Sakinatu Alidu	30	Farmer
19	Abiba Mohammed	32	Farmer
20	Asana Mohammed	36	Farmer
21	Felicia Akua	45	Farmer
22	Faati Martha	42	Farmer
23	Afua Gyinapo	48	Farmer
24	Adwoa footi	35	Farmer
25	Akosua Juliet	36	Farmer
26	Grace Tan	37	Farmer
27	Akosua Nyobea	42	Farmer
28	Akua Dordaa	44	Farmer
29	Rahina Alhassan	39	Farmer
30	Mariama Tuahilu	50	Farmer
31	Ama Wajuli	60	Farmer
32	Philomena Soo	42	farmer/NDC women organiser

**NORTHERN REGION****Zakaryili community****01-05-2014**

No.	Name	Age/ description	Occupation
1	Alhassan Adu	Elderly	Farmer
2	Sherasu Alhassan	Youth	Farmer
3	Mohammed Abdul –Latif	Youth	Farmer
4	Alhassan Iddrisu	Youth	Farmer
5	Yakubu Iddrisu	Youth	Farmer
6	Alhassan Mohammed	Youth	Farmer

7	Fuseini Rashid	Youth	Farmer
8	Fuseini Abdulai	Youth	Farmer
9	Yakubu Wambei	Elderly	Farmer
10	Baba Alhassan	Elderly	Farmer
11	Abdul Rahiman	Elderly	Farmer
12	Yakubu Bawa	Elderly	Farmer
13	Alhassan Iddrisu	Elderly	Farmer
14	Sualisu Yusif	Youth	Farmer
15	Iddrisu Amin	Youth	Farmer
16	Iddrisu Abdulai	Youth	Farmer
1	Abiba Alhassan	Elderly	Farmer
2	Amina Fuseini	Youth	Farmer
3	Amina Yakubu	Elderly	Farmer
4	Fatimata Baba	Elderly	Farmer
5	Abiba Mohammed	Elderly	Farmer
6	Adisa Abdul-Rahman	Youth	Farmer
7	Abibatu Yusif	Youth	Farmer
8	Zulaiha Yakubu	Youth	Farmer
9	Sumayatu Yakubu	Youth	Farmer
10	Arishitu Alhassan	Youth	Farmer
11	Sanatu Alhassan	Youth	Farmer
12	Fatimata Latifu	Youth	Farmer
13	Mohammed Sahada	Youth	Farmer
14	Ayi Yakubu	Youth	Farmer
15	Rabi Sherazu	Youth	Farmer
16	Senatu Iddrisu	Youth	Farmer
17	Fuseina Yakubu	Youth	Farmer
18	Arahimatu Iddrisu	Youth	Farmer
19	Filila Alhassan	Youth	Farmer
20	Samatu Mohammed	Elderly	Farmer
21	Arishitu Baba	Youth	Farmer
22	Mariama Yakubu	Youth	Farmer
23	Abiba Sherazu	Elderly	Farmer
24	Abibata Alhassan	Youth	

Elderly: &gt;45 years

Youth: &gt;18 and &lt;45 years

**Moya community****01-05-2014**

No.	Name	Age	Occupation
1	Abukari Danna (Chief)	75	Farmer
2	Issahaku Azuma	50	Farmer
3	Abukari Mohammed	40	Farmer
4	Yakubu Abukari	30	Farmer
5	Baba Fuseini	40	Farmer
6	Karim Nina	40	Farmer
7	Sulemanna Azindo	38	Farmer
8	Zakariya Fuseini	35	Farmer
9	Alhassan Abubakari	50	Farmer
10	Ibrahim Mamudu	40	Farmer
11	Alhassan Yusif	42	Farmer
12	Alhassan Azindo	20	Farmer
13	Iddrisu Azima	40	Farmer
14	Abubakari Mansuru	20	Farmer
15	Abdulai Fuseini	30	Farmer

16	Shaibu Nina	43	Farmer
17	Sualisu Nina	45	Farmer
18	Amadu Majid	35	Farmer
19	Zakari Abukari	40	Farmer
20	Alhassan Bawa	45	Farmer
21	Abubakari Shaibu	70	Farmer
1	Sanatu Azuma	50	Farmer
2	Alimatu Zakariya	40	Farmer
3	Awabu Mahamatu	35	Farmer
4	Mariama Baba	29	Farmer
5	Zinabu Alhassan	30	Farmer
6	Mariama Alhassan	60	Farmer
7	Sakina Zakari	23	Farmer
8	Filila Alhassan	35	Farmer
9	Rahimatu Ibrahim	35	Farmer
10	Sulaya Iddrisu	28	Farmer
11	Azara Damba	60	Farmer
12	Mamunatu Abdul-Nasiri	18	Farmer
13	Mariam Majeed	32	Farmer
14	Sikina Shaibu	50	Farmer
15	Fati Alhassan	52	Farmer
16	Awabu Sulemana	18	Farmer
17	Abana Rashid	23	Farmer
18	Sanatu Azima	53	Farmer
19	Nima Alhassan	18	Farmer
20	Ashitu Abubakari	50	Farmer
21	Anatu Karim	38	Farmer
22	Fatima Sulemana	28	Farmer
23	Martha Bawa	60	Farmer
24	Fatimata Adam	40	Trader/Farmer
25	Adamu Moro	34	Trader
26	Fatimatu Osman	20	Farmer
27	Fati Fuseini	30	Farmer
28	Awabu Yussif	35	Farmer
29	Adamu Issah	60	Farmer
30	Hawa Fuseini	60	Farmer
31	Sanatu Yahaya	62	Farmer
32	Asana Abdulai	25	Farmer
33	Fushina Abukari	38	Trader
34	Larbi Issahaku	29	Trader

**Kenikeni Forest Reserve and Mole National Park****Grupe Community****02-05-2014**

No.	Name	Age	Occupation
1	Dari Naatida	30	Farmer
2	Kwaku Bayowo	30	Farmer
3	Awule Donkoyiri	52	Farmer
4	Dare Tan	28	Farmer
5	Simon Bugla	53	Farmer
6	Lamin Abdulai	20	Farmer
7	Kipo Simole	23	Farmer
8	Disuri Berviley	31	Farmer
9	Attah Zinkoni	50	Farmer

10	Pentu Aliasu	20	Farmer
11	Kular Yirikubaye	45	Farmer
12	Kipo Musah	23	Student/Farmer
13	Denyi Beyinar	30	Farmer
14	Kwame Beyinor	25	Farmer
15	Tinwah Dasaah	35	Farmer
16	Gbiale Gbentuota	30	Farmer
17	Yanyeke Yawkraah	55	Farmer
18	Kpibari Vinn	45	Farmer
19	Dramani Salisu	21	Student
20	Dramani Saaka	50	Farmer
21	Sunwale Kpankpori	45	Farmer
22	Adams Gbolosu	27	Farmer
	<i>Women</i>		
1	Jemi Aness	20	Farmer
2	Hawa Seidu	45	Farmer
3	Kpandzana Duntze	45	Farmer
4	Magazia Zinatuna	50	Farmer
5	Bamba Barah	20	Farmer
6	Wiagu Diana	45	Farmer
7	Alberta Tinnah	40	Farmer
8	Attah Fiah	29	Farmer
9	Yaa Jang	32	Farmer
10	Beyiwor	45	Farmer
11	Akua Dari	30	Farmer
12	Kwame Tanpogo	35	Farmer
13	Kulpor Anawa	35	Farmer
14	Attah Kipo	45	Farmer
15	Zinatornor Bawizia	50	Farmer
16	Kipo Abutu	40	Farmer
17	Yao Akosua	30	Farmer
18	Abiba Seidu	28	Farmer
19	Kulpor Ados	30	Farmer
20	Tampor Porlina	30	Farmer
21	Asata Mumuni	30	Farmer
22	Afisah Dari	35	Farmer
23	Adwoa Zore	45	Farmer
24	Fati Dramani	40	Farmer
25	Vorsana Dramani	25	Farmer

**Kenikeni Forest Reserve and Mole National Park****Nasoyiri Community****02-05-2014**

No.	Name	Age	Occupation
1	Nasoyiri Wura	-	Farmer
2	Sey Nalotey	-	Farmer
3	Sansan Bidintey	50	Farmer
4	Bisen Kontome	35	Farmer
5	Ollo Sonyitey	43	Farmer
6	Nyolina Taba	30	Farmer
7	Bitoyiri	22	Farmer
8	Andrew Selli	23	Farmer
9	Dokobo Ditey	25	Farmer
10	Jacob Bale	35	Farmer
11	Bashiru Fornule	40	Farmer

12	Fotey Lifatey	45	Farmer
13	Solety Sansa	50	Farmer
14	Dale Kpoku	30	Farmer
15	Bitoyiri	56	Farmer
16	Sekentey	60	Farmer
17	Adam Natorma	46	Farmer
18	Tensare Selle	58	Farmer
19	Banala Kani	48	Student
20	Botwo Sontey	47	Farmer
21	Kyilentey Chichutey	56	Farmer
22	Dare Bola	54	Farmer
23	Maalyir	23	Farmer
24	Glikoli Gariba	54	Farmer
25	Yasotey	45	Farmer
	<b>Women</b>		
1	Bugula	43	Farmer
2	Nowenuma	35	Farmer
3	Sawala	58	Farmer
4	Juliana Akosua	20	Farmer
5	Gbollo	35	Farmer
6	Parreh	33	Farmer
7	Zanabu	34	Farmer
8	Phillipa Amoh	21	Farmer
9	Joana Turema	19	Farmer
10	Yaa Braf	42	Trader
11	Sahaana	51	Farmer
12	Nayorli Limah	32	Farmer
13	Mabel Dawo	23	Farmer
14	Yaatel Dawo	30	Farmer
15	Yiri Binana	48	Farmer
16	Yaa Nebina	45	Farmer
17	Grace Temale	35	Farmer
18	Rita Ayulo	41	Farmer
19	Victoria Alamina	42	Farmer
20	Bena Yare	40	Farmer
21	Wamuni	33	Farmer
22	Dusama	35	Farmer
23	Sudiri	40	Farmer
24	Rophina	30	Farmer
25	Sentey Chabb	31	Farmer
26	Hanna Mopu	42	Farmer
27	Yiley	37	Farmer
28	Adams Gyikye	35	Farmer
29	Adams Nafisa	32	Farmer
30	Janet Solomey	40	Farmer
31	Manno Dare	55	Farmer
32	Nkaayene Sankuma	35	Farmer
33	Adwoa Tireh	35	Farmer
34	Sofaa Yiri	22	Farmer
35	Comfort Tire	30	Farmer
36	Maa Adwoa	37	Farmer
37	Afua Mumuni	27	Farmer
38	Yaa Angelina	22	Farmer

Contact person	Position	Contact number	Date
<b>FSD, Tamale, Bole</b>			
Ebenezer Djabletey	Regional FSD Manager	0244639643	30-04-2014 / 01-05-2014
Emmanuel Okrah	Tamale District FSD Manager	0243716352	30-04-2014
Nii Kwei	Tamale Assist. Dist. Manager	0200122333	30-04-2014 / 01-05-2014
Paul Hinnah	Bole Assist Dist. FSD Manager	0244934324	02-05-2014
Joseph Akuoko	Bole-TO/Range Supervisor	0242108943	02-05-2014
Saviour Attu	Bole – TO/Range supervisor	0243141630	02-05-2014
<b>Lands Commission, Tamale</b>			
Samuel Anini	Head- LVD	0244618902	05-05-2014
Osei Owusu	Head- PVLMD	0244633902	06-05-2014
Yaw Aboagye	Regional Lands Officer/ Head-Survey & Mapping	0244798808	06-05-2014
<b>Tree Aid Ghana - NGO</b>			
Andrew Dokurugu	Country Director	0208882226 <a href="mailto:andrew.dokurugu@treeaid.org.uk">andrew.dokurugu@treeaid.org.uk</a>	05-05-2014
<b>OASL, Tamale</b>			
Franklin Oppong Obiri	Regional Stool Lands Officer	0207339887/ 0244496668	05-05-2014
<b>EPA, Tamale</b>			
Musa Adam Jafaru	Programme Officer	0244445831/ 0501301601	05-05-2014
Jimah Louly	Programme Officer	0543315665/ 0501301600	05-05-2014
Abu Iddrisu	Regional Director		05-05-2014
<b>GNFS, Tamale</b>			
Douglas Koyiri	Regional Fire Commander	0208284332	05-05-2014
<b>Department of Community Development</b>			
Williams Alagma	Regional Director	0244845045/0206277359 <a href="mailto:alagwillie@yahoo.com">alagwillie@yahoo.com</a>	06-05-2014
<b>MOFA, Tamale</b>			
William Boakye Acheampong	Regional Director	0244216918	06-05-2014
<b>RCC, Tamale</b>			
Alhassan Issehaku	RCD	0208236483	06-05-2014
<b>Care International-NGO</b>			
Francis Avura	Local Governance & Advocacy Officer	0208137503	07-05-2014
Nuhu Suleimana	Livelihood and Disaster Risk Reduction Officer	0248406305	07-05-2014
<b>Association of Church-Based Development NGOs (Acdep)</b>			
Pealore Zachary	ECCRING Project Manager	0206151928/ <a href="mailto:razackpealore@acdep.org">razackpealore@acdep.org</a>	07-05-2014
Michael Pervarah	Project Manager	0244777442	07-05-2014

**UPPER EAST REGION**

Contact person	Position	Contact number	Date
<b>FSD - Bolga, Navrongo</b>			
James K. Ware	Regional FSD Manager	0207142090	07-05-2014
Robert Deri	Bolga District FSD Manager	0208158736	07-05-2014
Kobina Baiden	Bolga Assist. Dist. Manager	0208316214	07-05-2014
Awuah Oteng	Navrongo Dist. FSD Manager	0243373059	07-05-2014
Agbontor Raymond	Navrongo ADM	0209161881	07-05-2014



Contact person	Position	Contact number	Date
<b>Wildlife Division</b>			
John Naada Majam	Regional Wildlife Div. Manager	0244167419	08-05-2014
<b>Lands Commission, Bolga</b>			
Alhassan B. Zakariah	Head- LVD	0209123550	08-05-2014
Eric Mwim	Head- PVLMD	0202857941	08-05-2014
Seidu Zakari Abu	Ag. Regional Lands Officer/ Head-Survey & Mapping	0209656296	08-05-2014
<b>Office of the Administrator of Stool Lands (OASL), Bolga</b>			
Larri John Kwame	Regional Stool Lands Officer	0246361631	08-05-2014
<b>EPA, Bolga</b>			
Hamidu Abdulai	Assist. Programme Officer	0268861474	08-05-2014
Agbenyeka Godfred		0249990930	08-05-2014
Benedict Agamah		0242342376	08-05-2014
Freda Amizia		0203217602	08-05-2014
<b>GNFS, Bolga</b>			
Albert A. Ayamga	Regional Fire Commander	0208240499/0242569152	08-05-2014
Albert Adongo Ayamga	Rural Fire Department-Officer	0208384171/0245914619	08-05-2014
<b>FORIG, Bolga</b>			
Stephen Akpalu	Research Scientist	0207392105	09-05-2014
Gloria Adeyiga	Research Scientist	0207327391	09-05-2014
<b>MOFA, Bolga</b>			
Zimri Alhassan	Assist. Regional Ext. Officer	0240399482	09-05-2014
Ben Issah	Reg. Extension Officer	0244838789	09-05-2014
<b>WRC- Volta Basin, Bolga</b>			
Aaron Aduna	Volta Basin Officer	0242074137/0208234442 <a href="mailto:aaronaduna@yahoo.com">aaronaduna@yahoo.com</a> <a href="mailto:aaronaduna@gmail.com">aaronaduna@gmail.com</a>	09-05-2014
<b>NADMO, Bolga</b>			
Paul Wooma	Deputy Chief Disaster Control Officer	0206381927	09-05-2014
<b>RCC, Bolga</b>			
Paul K. Abdul Korah	RCD/Chief Director	0244632151	09-05-2014

1. Energy Commission-Accra 16-05-2014  
Julius Nyarko, Senior Programme Officer  
0546995989

2. SNV, Accra Date: April 7, 2014  
Quirin Laumans  
Country Sector Leader – Agriculture  
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**Annex 4          Initial Stakeholder Engagement Report**

(Is a separate or standalone document)

**Annex 5          Spatial Analysis and GIS Maps**

(Is a separate or standalone document)

## Annex 6 Case Study Report

### Methodology

Field visits were undertaken to ascertain the conditions of selected forest and wildlife reserves in the western region. Interviews were conducted with managers of the forest reserves and protected areas as well as forest edge dwellers to identify the driving forces of forest degradation and deforestation where it is apparent. Discussions were held with the executive officers of the Amokwawuso CREMA (Community Resource Management Area), one of 19 certified CREMAS out of a total of 27 country-wide. The conditions of the reserves were classified as follows:

- Almost Extinct – the reserve almost has been converted to other land use and appears unrecoverable e.g. human settlement, farms
- Partially Extinct – over 50% of land area converted to other land use e.g. human settlements and farms and appears recovery will be difficult
- Poor – fragmented, canopy broken in many places due to encroachment by farmers
- Good – largely intact but faces significant threats from competing land use in the near future
- Excellent- completely intact; no threat in the near future

### Results

#### Conditions of Reserves

Three forest districts and a wildlife conservation area were selected in the Ankasa-Bia-Krokosua corridor for scrutiny (Table 1). All the forest estates listed above have suffered various degrees of encroachment which has led to massive deforestation.

Some have been completely destroyed and converted into settlements and cocoa farms (e.g. Bodi, Tano Suraw Extension, Tano Ehuro, Bia-Tawya, Anhwiaso East) while some are seriously threatened or threatened (Krokosua, Anhwiaso North and Anhwiaso South).

Table 1: The list of forest districts and wildlife reserves visited and their conditions

Forest/Wildlife Reserve	Condition
Ankasa Conservation area	Good
Enchi Forest District	
Tano Ehuro	Partially Extinct
Tano Anwia	Good
Juaboso-Bia Forest District	
Bia Tributaries North	Good
Krokosua	Poor
Sukusuku	Almost Extinct
Manzan	Almost Extinct
Bia-Tawya	Almost Extinct
Bodi	Almost Extinct
Mpesetum	Almost Extinct
Bibiani Forest District	
Afao Hills	Poor
Anhwiaso North	Poor
Anhwiaso South	Poor
Anhwiaso East	Almost Extinct
Sumtwitwi	Poor
Tano Suraw	Poor (restricted Gold mining)
Tano Suraw Extension	Almost Extinct

Upper Wassaw

Poor

### Ankasa Conservation Area

The Ankasa Conservation Area (ACA) is a 509 km<sup>2</sup> protected area, consisting of the Nini-Suhien National Park (166 km<sup>2</sup>) and the Ankasa National Park (343 km<sup>2</sup>), in the Jomoro District in southwest Ghana. It became a protected area in 1934. The ACA lies in the Wet Evergreen forest zone and is adjudged the most biodiverse forest in Ghana. It has over 800 recorded plant species, good populations of elephants, antelopes, leopards and other large mammals, including the Western Chimpanzee, Roloway Diana Monkeys and the Geoffroy's Red Colobus. It also has over 200 birds including the white-breasted guinea fowl (*Agelastes meleagrides*), and over 600 butterfly species. It serves as a shed for many rivers and streams. It is under the management of the Wildlife Division of the Forestry Commission.

The fringe communities are of the Nzema ethnic group and are predominantly farmers. The major crops cultivated are Cocoa and Cassava and recently Rubber and Oil Palm.



Ankasa Park HQRS –Illegal lumber impounded/arrested (KIA truck)

### Issues of concern

The major issues of concern that were identified in the ACA are poaching and encroachment by farmers. Most of the deforestation and degradation has occurred outside the protected area and is largely the result of cultivation of cocoa by migrant farmers and small scale mining operations on concessions granted by the District Assembly. Cultivation of Rubber and Oil Palm is on the increase in the off reserve areas. The Sowodadzem area, through which passes the road to the park entrance is seriously threatened by small scale mining.

Portions of the Ankasa National Park have been encroached by cocoa farmers and the affected area is the subject of litigation at the law courts (e.g. the case of Prophet Aboagye is in court). Most of the boundary pillars cannot be traced, making it difficult to determine the size of reserve encroached. Only one Boundary pillar was seen at the confluence of the Ankasa and Oguntwe rivers in the reserve (location N 05° 12.946; W 002°40.983). The Wildlife Division has been restrained by a court injunction, from destroying the cocoa farms. The under listed locations within the Ankasa National Park are within cocoa farms which are subject of litigation:

Latitude	Longitude	Remark
N 05°13.086	W 002°40.564	Old farm, no new clearing permitted, no new clearing permitted
N 05°13.060	W 002°40.629	2 year old farm
N 05°13.028	W 002°40.74	
N 05°13.137	W 002°41.001	new cocoa farm
N 05°13.036	W 002°41.037	new cocoa farm

The presence of these illegal farms in the ACA brings to the fore systemic and institutional failures. Weak legislation and inadequate law enforcement coupled with lack of institutional capacity for monitoring have resulted in the flagrant violation of and rape of the ACA.

Most of the cocoa farms inspected in the reserves and surrounding areas do not have shade trees, as recommended by the Cocoa Research Institute – most of the farmers engage in no-shade or sunlight cocoa cultivation. Some farmers claim the variety of cocoa planted requires likes sunlight and intensive fertilizer application that results in high yields.

#### ***Interaction with Amokwawuso Community Resource Management Area Executives (CREMA)***

The Amokwawuso CREMA is a 32 km<sup>2</sup> area consisting of small-scale farmers and land owners around the ACA. It was the first CREMA to be established in Ghana and its certificate of devolution was issued in 2003. It was set up purposely for the sustained production of bushmeat, increased income, employment and tourism. According to Mr Paul Kodjo, the idea to set up the CREMA originated from the Wildlife Division and it took three years for the concept to be accepted and the CREMA Executive Committee (CEC) formed. There were challenges with control of poaching and harvesting of NTFPs (Non-Timber Forest Products) in the ACA. The CEC and Community Resource Management Committees (CRMC), which operate at the community level, conducted patrols that led to a decline in poaching and illegal harvesting of NTFPs.

However, lack of funds and unrealized expectations of personal benefits have led to disillusionment among the members. Spot hunting, which was anticipated as a benefit of the CREMA, was not successful. Weaknesses in the wildlife regulations did not help matters, e.g. the Wildlife Division dealt with only poachers arrested in the reserve but not off reserve and the fines are not deterrent enough. Monitoring activities, currently does not extend to chop bars, thus the avenues for poachers to dispose of bushmeat still exist. This calls for enhancement of preventive actions by Wildlife Division.

The farmers engage in no-shade cocoa because of lack of knowledge. Rubber cultivation is becoming popular and cocoa farmers are shifting to rubber because it is more transparent. The cocoa farmers have issues with perceived corruption in the cocoa buying sector.

CREMAs could end the alienation of local communities from managing natural resources which could lead to elimination of entrenched local poverty.

#### **Enchi Forest District**

##### ***Tano Ehuro Forest Reserve***

The Tano Ehuro Forest reserve is a Moist Evergreen forest covering an area of 176.1 km<sup>2</sup> in the Enchi forest district. It was established in 1967. The reserve has been encroached by farmers for over 30 years and a vibrant community with a polling station and electricity supply is developing in it. Attempts by the government to halt the encroachment failed. The farmers in the reserve are mostly settlers from other parts of Ghana, mostly Dagatis, Krobos, Brongs and Ewes. According to the manager of the reserve, the Achimfo hene (land owner) and the Sefwis give out the land to settler farmers.

There is an obvious lack of political will to restore the reserve. In its current form, it is partially extinct.



Tano Ehuro FR – Encroachment: cocoa farms



Tano Ehuro FR –illegal settlement in reserve

#### *Tano Anwia Forest Reserve*

This reserve was established in 1935. It is a Moist Evergreen Forest of size 153.1 km<sup>2</sup>. The reserve is largely intact but faces challenges with encroachment through the expansion of admitted farms.

The Forest Service Division is currently clearing new cocoa farms in the reserve (Location Lat. N05°52'46.6" Long. W002°30'41.0).



Tano Anwia FR-Encroachment: Cocoa farms (destroyed by FSD)

#### **Juabeso Forest District**

The Juabeso Forest district has 7 forest reserves, all of which are suffering encroachments. Five of the reserves have been almost converted to cocoa farms and towns while the remaining are under stress. The under listed reserves have been almost converted to farms and settlements.

**Sukusuku FR:** Moist Evergreen forest reserve established in 1972. It has an area of 147.6 km<sup>2</sup>.

**Manzan FR:** Moist Semi-deciduous forest, established in 1972 with area 305.6 km<sup>2</sup>.

**Bia-Torya FR:** Moist Evergreen Forest, established in 1965, with area 678.6 km<sup>2</sup>. The reserve is the location of the town Bonsu Nkwanta which has banks and other infrastructure

**Bodi FR:** Moist Evergreen forest established in 1967, with area 175.3 km<sup>2</sup>.

**Mpesetum FR:** (no records)

These 5 reserves are almost extinct and would be very difficult, if not impossible, to restore. The remaining 2 reserves in the Juabeso district are under varying degrees of stress.



***Bia Tributaries North FR***

Moist Semi-deciduous forest established in 1940, with area of 356.1 km<sup>2</sup>. This is the only reserve that is not facing much stress from encroachment.

***Krokosua Hills FR***

Moist Semi-deciduous forest established in 1935 with area of 481.7 km<sup>2</sup>. A portion of the reserve has been declared a Globally Significant Biodiversity Area. Large portions of the reserve have been converted in to cocoa farms (Nkwanta town) largely because the boundary lines are not clearly demarcated. There are 38 admitted farms in the reserve and most of them have expanded beyond their boundaries. The FC has been prevented from destroying the extensions through court injunctions obtained by the farmers. Mining is a threat at Seyiraso and Agyemandiem.

***Issues of concern for both Enchi Forest and Juabeso Forest Districts***

- A number of issues that militate against the effort at curbing encroachment in the Krokosua Hills FR are
- Large number of admitted farms
- Unclear boundaries of the admitted farms
- Litigation – cases are prolonged at the law courts, encouraging people to continue encroaching on reserve
- Inadequate budgetary allocation for rapid reforestation of encroached areas
- Ineffective monitoring due to inadequate human and material resources
- Corruption – some officers connive with farmers to extend the boundaries of their farms. Staff should be adequately motivated to cure this practice.
- Lack of political will to drastically deal with issues of encroachment.
- Apparent Governmental endorsement through provision of infrastructure and other social amenities to communities in forest reserves



Krokosua FR- Encroachment: farms and hamlets

***Bibiani District***

The Bibiani forest district has 8 forest reserves, two of which are almost extinct and the rest under various degrees of degradation and deforestation.

***Afao Hills FR:*** Moist Semi-deciduous forest of area 34.7 km<sup>2</sup>. Bauxite mining occurs in the reserve and is the main cause of degradation.

**Anhwiaso East FR:** Moist Semi-deciduous forest established in 1926, originally of size 124.3 km<sup>2</sup> but now 79.09 km<sup>2</sup>. Almost all the land has been converted to farms. Taungya is being undertaken in places not under encroachment by cocoa farmers.

**Anhwiaso North FR:** Moist Semi-deciduous forest of size 3.6 km<sup>2</sup> established in 1926. The reserve is largely intact, with minimal encroachment.

**Anhwiaso South FR:** Moist Evergreen forest established in 1926, of size 22.3 km<sup>2</sup>. The reserve has been largely encroached by farmers.

**Sumtwitwi FR:** Moist Semi-deciduous forest established in 1939, of size 3.6 km<sup>2</sup>. The reserve is in a poor state due to encroachment, it could become extinct in the near future.

**Tano Suraw Extension FR:** Moist Semi-deciduous forest, established in 1935, of size 75.1 km<sup>2</sup>. The reserve has been almost/ completely encroached by cocoa farmers.

**Tano Suraw FR:** Moist Semi-deciduous forest established in 1934, of size 28.5 km<sup>2</sup>. Large scale gold mining operation in the reserve is the only source of degradation and deforestation.

**Upper Wassaw Fr:** Moist Evergreen forest established in 1925, of area 100.8 km<sup>2</sup>. The reserve is largely intact with no illegal farms. Degraded areas have been placed under taungya.

### ***Issues of concern for Bibiani District***

- Preference for cocoa cultivation has led to scarcity of land for cultivation of food crops thus leading to encroachments on forest reserves
- Litigation – inability of courts to settle land cases of encroachment speedily has led to the expansion of townships such as Abodoabo in the Anhwiaso East
- Admitted farm boundaries are sometimes extended with connivance of officials e.g. Blankson area
- Lack of political will – the Abodoabo community is illegal but the Government is providing social infrastructure
- Sabotage by communities – replanting efforts are thwarted by communities bordering the reserves
- Weak enforcement of Laws
- Most admitted farms are not pillared so boundaries are not defined
- Weak monitoring due to inadequate staff, forest guards who retire are not replaced

### **Drivers of Deforestation identified in all the forest reserves visited**

1. Land Hunger – preference for cocoa plantations over food crops has led to the situation where there is virtually no land outside of the reserves for food crop production
2. Expansion of admitted farms – the boundaries of most admitted farms are not clearly defined thus the owners of such farms expand their holdings easily
3. Corruption – some corrupt officials connive with community members to expand the boundaries of admitted farms for personal gain
4. Inadequate staffing – presents challenge to monitoring of the boundaries and inspection of reserves thus a lot of the encroachments happen on the blind side of Forestry staff
5. Weaknesses in Legislation – the current laws are not adequate to deal decisively with issues of encroachment; injunctions issued by law courts encumber the FC; litigation over land ownership is a major cause of the deforestation especially since the perpetrators are allowed to harvest their crop while land is under dispute
6. Lack of political will – towns and villages that have developed in some reserves are expanding and attracting infrastructure such as schools, health posts and electricity
7. Ineffective measures aimed at halting encroachment – the militaristic approach to dealing with the issue of encroachments (Operation Halt) failed to yield the anticipated results. Law enforcement agencies the capacity to prevent encroachments on forest reserves.
8. Lack of motivation and or low morale of work force – systemic issues bordering on lack or inadequate adequate reward and compensation packages have contributed to staff indifference to the menace of illegal forest conversion to other uses.

**Recommendations**

The case studies have clearly pointed out the weaknesses inherent in our legal regimes and institutional structures that have resulted in the large scale deforestation and forest degradation of the forest reserves studied. The following recommendations are proposed to help address some of the issues identified.

- 1) Declassification of reserves – it is recommended that that the almost extinct forest reserves should be declassified as such.
- 2) The judicial system - special tribunals should be set up to speedily dispose of litigation in forest reserves. Injunctions granted should restrain both parties' access to land in dispute
- 3) Penal system - this should be reviewed to make fines and penalties deterrent
- 4) Provision of adequate resources – the FC should provide adequate resources (human, financial and equipment) for monitoring and restoration activities in the protected areas
- 5) Motivation – staff should be adequately motivated to prevent corruption
- 6) Demarcation and refinement of admitted farm boundaries – This should be undertaken as a matter of urgency to curb the menace posed by admitted farm expansions

**Annex 7        SESA Regional Workshop Report**

(Is a standalone or Separate Report and therefore not part of this main report)

**Annex 8        SESA Validation Invitation letter and list of Participants at the Validation Workshop**

(Is a standalone Annex)

**Annex 9      World Bank comments on the 2014 SESA Report and Responses**