Republic of Ghana

Final Country Report of the Land Degradation Neutrality Target Setting Programme

UNCCD NATIONAL FOCAL POINT

LDN NATIONAL WORKING GROUP

MINISTRY OF ENVIRONMENT, SCIENCE, TECHNOLOGY AND INNOVATION/

ENVIRONMENTAL PROTECTION AGENCY (EPA)

Accra, Ghana

December 2017

This document has been prepared with the support of the Land Degradation Neutrality Target Setting Programme (LDN TSP), a partnership initiative implemented by the Secretariat and the Global Mechanism of the UNCCD, with support of the following partners: France, Germany, Luxembourg, Republic of Korea, Spain, Trinidad and Tobago, Turkey, European Space Agency, Food and Agricultural Organization of the United Nations, Global Environmental Facility, ISRIC-World Soil Information, International Union for Conservation of Nature, Joint Research Centres of the European Commission, Soil Leadership Academy, United Nations Development Programme, United Nations Environment Programme, World Resources Institute.

The views and content expressed in this document are solely those of the authors of the document and do not necessarily represent the views of the LDN TSP or any of its partners.

TABLE OF CONTENTS

LIST OF TABLES ..... **iv**

ACRONYMS ..... **v**

SUMMARY ..... **vi**

1 Introduction **1**

2 Leveraging LDN **1**

2.1 Interest of the country to commit to LDN and Set LDN Targets. 1

2.2 Leverage Opportunities Identified 2

2.3 LDN Working Group – Issues Discussed and Endorsed. 3

2.3.1 Issues Pending Discussions and Endorsement by the LDN National Working Group 3

3 Assessing LDN **4**

3.1 LDN trends and drivers 4

3.2 LDN Institutional and Legal Environment 5

3.3 LDN Baseline. 7

4 Setting LDN Targets **7**

4.1 LDN Targets 7

4.2 Associated Measure to Achieve LDN 8

5 Achieving LDN **8**

5.1 Leverage Already Achieved 8

5.2 LDN Transformative Projects and Programmes Opportunities Identified. 9

6 Conclusion **12**

6.1 Overall Achievements of the LDN Target Setting Process 12

6.2 Lessons Learned from the LDN Target Setting Process 13

ANNEXES **14**

Annex 1: Ghana National LDN Working Group 14

Annex 2.: Dates of Working Group Meetings and Workshops. 15

Annex 3: LDN Baseline Table 17

Annex 4: Drivers of Land Degradation and Associated measures for control. 18

Annex 5: LDN Transformative Projects and Programmes Opportunities identified. 25

Annex 6. List of reports submitted 27

Annex 7. LDN Targets, measures and timelines at the national level. 28

Annex 8: LDN Targets, measures and timelines at the Regional Level. 30

Annex 9: Draft measures identified for consideration by UNCCD National Focal Point and LDN working group. 41
Annex 10: 58

LIST OF TABLES

Table 1: LDN Target Setting (National Level) 28
Table 2a – LDN Target in the Northern Region 30
Table 2b – LDN Target in the Upper West Region 32
Table 2c – LDN Target in the Upper East Region 33
Table 2d – LDN Target for Brong Ahafo Region 34
Table 2e – LDN Target for Ashanti Region 35
Table 2f – LDN Target for Central Region 36
Table 2g – LDN Target for Western Region 37
Table 2h– LDN Target for Eastern Region 38
Table 2i – LDN Target for Volta Region 39
Table 2j – LDN Target for Greater Accra Region 40
Table 3: Hotspots based on the magnitude of area affected by net productivity decline at the Regional Level. 58

ACRONYMS

AfDB	African Development Bank
CF	Carbon Fund
CIF	Climate Investment Funds
CREMA	Community Resource Management Area
EPA	Environmental Protection Agency
FC	Forest Commission
FCPF	Forest Carbon Partnership Fund
FIP	Forest Investment Programme
FLEGT	Forest Law Enforcement Governance and Trade
GCF	Green Climate Fund
GEF	Global Environment Facility
GoG	Government of Ghana
GSIF	Ghana Statistical Investment Framework
HFZ	High Forest Zone
INDC	Intended Nationally Determined Contributions
IUCN	International Union for Conservation of Nature
MESTI	Ministry of Environment, Science, Technology and Innovation
MLNR	Ministry of Lands and Natural Resources
MoF	Ministry of Finance
MoFA	Ministry of Food and Agriculture
REDD+	Reduced Emission from Deforestation and Degradation (Conservation, sustainable management of forests and enhancement of forest carbon stocks)
R-PP	Readiness Preparatory Proposal
SLM	Sustainable Land Management
SLWM	Sustainable Land and Water Management
UNCBD	United Nations Conservation on Biodiversity
UNCCD	United Nations Convention to Combat Desertification
VPA	Voluntary Partnership Agreement

SUMMARY

This report provides a brief and concise synthesis of the key Land Degradation Neutrality (LDN) outputs and outcomes achieved and documented during the national LDN target setting process.

Ghana's commitment to LDN is premised on its share in LDN's goal, objectives, processes, multiple environmental and societal benefits and integrated land use planning and management approaches used in avoiding, reducing and reversing land degradation. The aim of the national voluntary target setting is to help unify, into a set of targets, all local and national actions directed at addressing land degradation in Ghana.

The key outputs and outcomes of the LDN process were baselines and targets for the LDN indicators (cover, productivity and carbon stocks), trends and drivers of land degradation, institutional and legal environment and measures to achieve LDN transformative projects / programmes. The 2000 and 2010 Tier 1 default data, derived from global sources, were used for the trend analysis and the setting of baselines and targets for the LDN indicators.

Within the base period, 882.86 km^2 of forest land were converted to shrubs, grasslands and sparsely vegetated areas (742.23 km^2) and crop lands (158.63 km^2). The latter two areas constituted the area to be **reversed / restored** to forest land to achieve LDN **(no net loss).**

The trend and drivers of land degradation analysis showed the major negative trend to be the above loss in forest land which by the 2000 base value, represented a loss of 1.7 % and an annual 88.29 km^2 forest land conversion to other land uses. The aggregated areas of the remaining unchanged land that experienced variable magnitudes of land productivity decline were 5107.70 km^2, 4593.39 km^2, and 18474.96 km^2 under forest land; shrubs, grasslands and sparsely vegetated areas; and crop lands respectively.

The **rehabilitation / restoration** of these three areas (28176.05 km^2) over the total national land area gives 11.80 % additional land area improved **(net gain).** The conversion of forest lands to crop lands resulted in a loss of 180261 Mg of the national soil organic carbon stock (0 – 30 cm soil depth) requiring replenishment / restoration.

The baselines and trends in land degradation informed the setting of the country's targets **(Box 1)** at three levels (national, regional and district), encompassing land degradation hotspots prioritized for interventions towards achieving LDN by 2030.

The direct and indirect drivers of land degradation were identified and the requisite technical and policy measures as well as the enabling legal and institutional environment to address them proposed.

Leveraging opportunities have been identified to serve as entry points for LDN implementation.

LDN transformative projects / programme opportunities, involving LDN compliant initiatives / projects, as well as potential innovative financing sources have been identified to underpin the design of quick-win and medium-term LDN projects. The former comprises the integration of LDN attributes and objectives into the identified LDN compliant initiatives / projects which are on-going or in-preparation. The latter adopts the focal area strategy to connect the dots between the three Rio Conventions (UNCCD, UNCBD and UNFCCC) through harnessing their synergies and linkages and tapping into their innovative financing sources to implement holistic, comprehensive and effective solutions to sustainable development issues, which have long suffered from fragmentation.

Discussions and negotiations are on-going to solicit for the requisite partners and support for the LDN transformative project / programme co-design and implementation in Ghana.

Box 1

LDN Targets at the National Level

- Reforest 882.86 km^2 of converted forest into other land use / cover types and rehabilitate / restore all abandoned legal and illegal mineral mining and sand mining sites by 2030
- Improve productivity and soil organic carbon stocks in 18475.96 km^2 of crop land by 2030
- Rehabilitate / restore 510.70 km^2 of degraded forest, including abandoned legal and illegal mining sites for enhanced productivity by 2030
- Rehabilitate / restore and sustainably manage 4593.39 km^2 of degraded shrubs, grasslands and sparsely vegetated areas for improved productivity and reduction in bush / wild fires by 2030
- Reduce conversion of 45079.72 km^2 of remaining forest to other types of vegetation and halt all illegal mining activities by 2030
- Increase soil organic carbon of degraded crop lands and rangelands from 1.2 % to 2.0 % by 2030

1 Introduction

Land is a key resource of our country's wealth and underpins the national economy by directly and indirectly generating the bulk of the national income and employment. It supports ecosystem services provision and the livelihoods of a large majority of the population, especially the rural population, through agriculture, forestry and fishing. In spite of these functions, our land resources (soil, vegetation, water and genetic diversity) are undergoing variable temporal and spatial intensities of degradation, including deforestation, erosion, soil fertility and productivity decline, deterioration of rangelands, desertification and degradation of water bodies (quantity and quality).

The Government of Ghana (GoG) has long realized the scourge of land degradation on the country's wealth and sustainable socio-economic development. Consequently, the Government views land degradation as an enormous development challenge, and is taking major steps to address the issues of desertification, land degradation and drought (DLDD). Specific interventions in this regard include sustainable natural resources management programmes, as well as projects which have been mainstreamed into and implemented by several of our land-related Ministries, Departments and Agencies (MDAs). To reinforce our efforts in combating land degradation, the GoG signed on to the membership of the Land Degradation Neutrality Target Setting Programme (LDN TSP) and accordingly took the center stage in the setting of the country's voluntary targets to achieve LDN by 2030.

This report is a brief and concise synthesis of the outputs and outcomes achieved and documented during the LDN target setting process. (Annex 6)

2 Leveraging LDN

2.1 Interest of the country to commit to LDN and Set LDN Targets.

The commitment of Ghana to LDN is premised on its share in LDN's goals, objectives, processes and integrated land use planning and management approaches in holistically addressing land degradation through its response hierarchy that encourages broad adoption of measures to avoid and reduce degradation, combined with localized action to reverse degradation to achieve LDN across each land type.

This is evidenced in the LDN-related decisions found in the country's development agenda, policies, strategies, programmes, projects and commitment to international development frameworks, accord with the following LDN objectives: i. Maintain or improve sustainable delivery of ecosystem services; ii. Maintain or improve productivity, in order to enhance food security; iii. Increase resilience of the land and the population's dependence on land; iv. Seek synergies with other social, economic and environmental objectives; and v. Reinforce responsible and inclusive governance of land.

The country also stands to gain from LDN's multiple environmental and societal benefits, which help to address issues such as food security, income equality, poverty and resource availability. It further provides significant benefits for mitigation of and adaptation to climate change. Other benefits are from direct contribution of LDN targets and measures to the implementation of national climate plans, and the facilitation of the country's delivery on the SDG's commitments

through the direct linkages between LDN and SDGs in the area of poverty, food security, environmental protection and sustainable use of natural resources.

It is envisaged that the implementation of the country's LDN targets and measures will support and catalyze the achievement of the government's policies and agenda, which include: i. planting for food and jobs; ii. Restoration of 30000 hectares / annum of degraded areas within and outside forest reserves through reforestation and plantation development using fast growing indigenous and exotic species; iii. Support the protection of the remaining network in the country, to serve as gene banks for indigenous species and refuge areas for threatened, and endemic and rare species; iv. Replanting of trees along the banks of all major water bodies and their tributaries to reduce siltation and other negative human activities adjacent to river banks; v. Ensuring that mining and logging activities are undertaken in an environmentally sustainable manner; and vi. Ensuring that land restoration is undertaken after the end of mining operations.

It is in the light of this commitment that Ghana applied to participate in the LDN TSP on 26th October, 2015, and admitted to the programme on 11th January, 2016.

2.2 Leverage Opportunities Identified

The achievement of some of the crucial challenges of the Sustainable Development Goals depends on access to productive and healthy land. These include food security, biodiversity loss, climate change, poverty, social instability and migration. LDN action is envisaged to help in addressing these challenges through a range of sustainable land management activities such as: i. integrated water management through sustainable land use; ii. Comprehensive energy planning and phasing out of fossils fuels through wise use of biofuels; increasing efficiency, closing yield gaps and reducing off-site impacts; iii. Improving security of land tenure, addressing gender disparities and reducing inequalities; and iv. Protecting large natural ecosystems for biodiversity and ecosystem services.

The successful implementation and achievement of LDN can thus connect the dots between many SDGs such as 1.-No Poverty; 2-Zero Hunger; 6-Clean Water and Sanitation; 7.-Affordable Clean Energy; 12.-Responsible Consumption; 13.-Climate Action; and 15.-Life on Land.

At the country level, this will depend on how linkages are managed to harness synergies between and capitalize on leveraging opportunities offered by the SDGs, in-country programmes, projects and commitments.

The preparation of our LDN Target Setting Leverage Plan was preceded by addressing questions of WHY LDN matters, WHAT to leverage, WHO to engage to create leverage and HOW to create a leverage plan. This facilitated the identification of leverage opportunities which constituted potential entry points for LDN implementation; and the basis for concrete actions to be undertaken to influence ongoing national processes/priorities in the context of LDN TSP. the following identified leveraging opportunities encompass several components and attributes of LDN:

- Ghana Shared Growth and Development Agenda (GSGDA) II (2014-2017)
- Medium Term National Development Policy Framework (2018-2021)
- The National Development Planning Commission mandated to assume the lead role in the implementation of the SDGs in Ghana
- African Forest Land Restoration Initiative (AFR100)

- Ghana Forest Investment Programme (GFIP)
- Sustainable Land and Water Management Project (2016-2020)
- Terr Africa Programme on Sustainable Land Management (SLM)-Ghana Strategic Investment Framework (Review in progress)
- Ghana REDD+ Programme (2016-2035)
- Ghana's Intended Nationally Determined Contributions (INDCs) (2020 – 2035)
- Adaptation Fund Programme: Increased Resilience to Climate Change in Northern Ghana through Management of Water Resources and Diversification of Livelihoods (2016-2020)

2.3 LDN Working Group – Issues Discussed and Endorsed.

The LDN-TSP has a multidisciplinary and multi-stakeholder national Working Group with a mandate to steer the LDN target setting process and promote LDN mainstreaming and implementation (Annex 1). The issues discussed at meetings and workshops (Annex 2) and endorsed by the Working Group include:

- The use of Tier 1 Default data from global sources for the LDN Target Programme whilst sustained effort is made to acquire reliable and coordinated country-specific data on carbon stocks and land cover / use of higher resolution in conformity with the global LDN land cover / use format.
- Outputs and outcomes comprising baseline for the LDN indicators; land degradation trends, drivers and measures; policy, legal and institutional analysis for the creation of enabling environment for LDN; LDN leveraging opportunities; land degradation hotspots; and Government High Level Note of Measures to Achieve the National LDN Targets.

2.3.1 Discussions and Endorsement by the LDN National Working Group

The issues include the following:

- Endorsement of LDN implementation Work Plan
- Discussions on long-term LDN implementation between institutions and organizations involved in LDN implementation in Ghana
- Discussions on the integration of LDN into specific policies and commitments, including a general strategy for this.
- Discussions on the preparation of Ghana's LDN Transformative Projects.
  Draft documents (Annex 6) have been circulated to the LDN Working Group for review. It is envisaged that based on the availability of funds, the Working Group will initiate the requisite consultations, negotiations and workshops to discuss and finalize the documents, and take the lead role in drafting and implementation of LDN projects / programs in the country.

3 Assessing LDN

3.1 LDN trends and drivers

The ultimate aim of achieving LDN is to maintain and enhance the amount of healthy and productive land resources, in line with national development priorities to capitalize on the synergies. This requires assessing land degradation trends and their drivers to understand current conditions of land degradation, reveal anomalies and identify degraded areas and provide informed evidence base for setting sound LDN baselines and targets for the requisite rehabilitation and restoration interventions. The 2000 and 2010 Tier 1 default data and maps, covering the three LDN indicators were used to assess land degradation trends. The values obtained were used as the baselines and targets to achieve LDN. (Annex 3)

Within 2000 and 2010, the major negative land cover/use change (cover indicator) at the national level was a 1.71 % decrease due to the conversion of 882.86 km^2 of forest lands to 724.23 km^2 of shrubs, grasslands, and sparsely vegetated areas (hitherto referred to as grasslands), and 158.63 km^2 of croplands.

These areas constituted the area to be **reversed / restored** to forest land to achieve LDN (**no net loss**) at the national level.

The top four Regions, registering a total of 95.43% of the conversion of forest lands to grasslands, were Northern (540.49 km^2), Upper West (99.81 km^2), Brong Ahafo (32.45 km^2) and Upper East (18.35 km^2). In the case of croplands, 73.82 % of the conversion occurred in the Western (61.97 km^2), Northern (13.58 km^2), Volta (10.66 km^2) and the Eastern (10.54 km^2) Regions.

The remaining unchanged land cover / use experienced variable intensities (declining, early stage and stable but stressed) of land productivity decline. At the national level, these covered 5107.70 km^2 of forest lands, 4593.39 km^2 of grasslands, and 18474.96 km^2 of crop lands for the baseline period of 2000 to 2010 with productivity as the indicator. The **rehabilitation / restoration** of the aggregated areas of the three land cover / use (28176.05 km^2) over total national land area gives 11.80% of additional land area improved (**net gain**). The following land use / cover types that remained unchanged had stable, unstressed productivity and increasing productivity, requiring measures for **avoiding / preventing** degradation: i) 45079.72 km^2 forest lands; ii) 58492.32 km^2 shrubs, grasslands and sparsely vegetated areas; iii) 96185.14 km^2 croplands.

Soil organic carbon (SOC) of the three land cover / use types ranged between 41 to 43 Mg ha^{-1} with the conversion of forest land to cropland resulting in a total loss of 18206 Mg of soil organic carbon stock at the 0-30 cm soil depth.

The major types of land degradation identified by the trend analysis were deforestation and forest degradation; and land productivity decline in the three land cover/use types, namely, forest lands, shrubs, grasslands and sparsely vegetated areas; and croplands.

These were reviewed to identify the drivers within the country context to inform appropriate measures to address the problems towards achieving LDN.

The analysis by Ghana's R-PP (2010) identified the direct drivers of deforestation and forest degradation as: i) agricultural expansion (c 50%); ii) harvesting of wood (c 35%), iii) population and development pressures (c 10%); and iv) mineral exploitation and mining (c 5%). Differences, however, exist between the high and forest zone (HFZ) and savanna areas. Fires and livestock have more important roles in the savanna grassland vegetation. The recognition of the

savanna and transition as the main source of fuel wood and charcoal also makes charcoal production an important driver.

The underlying (indirect) drivers include: i) policy and governance issues (enforcement of regulations, weak regulatory mechanisms and rights regimes, land and tree tenure, excessive central control and conflicting government policies); ii) economic forces (a growing domestic demand, a relatively ineffective logging and milling industry, market failures, forest royalty system that does not price trees at their real economic value); iii) demographic factors (population growth and related factors, such as high demand for wood products and fuelwood, uncontrolled agricultural expansion and urbanization).

Agricultural expansion resulting from conversion of forest lands to crop lands increases the areas under cultivation. These crop lands are subject to different forms of land degradation, including soil erosion, soil fertility and productivity decline and reduced soil organic carbon stocks, soil physical deterioration, including soil structure, compaction and surface sealing.

The direct drivers of these forms of degradation include: i) deforestation and removal of natural vegetation; ii) improper soil management practices; iii) poor management of annual, perennial and tree crops; iv) overgrazing ; v) depletion of soil nutrients without replenishment; vi) slash-and-burn agriculture; vii) bush fires; viii) reduced fallow periods; ix) illegal mineral mining (locally referred to as 'galamsey'); x) sand and gravel wining; and xi) low input of mineral fertilizers and organic amendments (compost, manure, crop residues).

The indirect drivers include: i) poverty; ii) inadequate farm inputs (including access to credit) and infrastructure; iii) education, access to knowledge and extension services; iv) poorly developed input-output markets; vi) insecure land tenure, vii) increasing population pressure and viii) climate variability and change (drought, floods).

3.2 LDN Institutional and Legal Environment

The indirect drivers of land degradation, consisting of policy, legal and institutional frameworks governing land management may contribute to either land degradation or the promotion of sustainable land management / integrated landscape management (SLM / ILM) towards achieving LDN. These were analyzed to identify gaps, inconsistencies, weaknesses and opportunities to inform the creation of the requisite enabling environment for LDN implementation. In the main, the analysis emphasized the polices, laws and institutions that align with the principles, objectives and response hierarchy (avoid>reduce>reverse) of LDN to land degradation.

The detailed documented reports of the analysis examined topics, including, what constituted legal and institutional frameworks; LDN-related decisions in the national context, particularly in the national development agenda, programmes / projects and commitments to international frameworks; the regulatory regimes (policies, laws and regulations) related to land use, land tenure and economic development; current market mechanisms and more specific governance and financial issues that can affect LDN achievement; and SWOT(Strength, Weaknesses, Opportunities and Threats) analysis on the linkage between the legal and institutional environment and the country's commitment to achieve LND.

The LDN compliant legal frameworks, with their provisions, included: 1992 Republican Constitution of Ghana; Land Planning and Soil Conservation Ordinance (1953); Land Planning and Soil Conservation Act (1957); Minerals and Mining Act, 2006 (Act 703); Administration of

Lands Acts 1962 (Act 123); Minerals and Mining (Amendment) law, 2014; Control and Prevention of Bushfires Act 1999 (PNDCL 229); and Water Use Regulations. 2001 (L.I. 1692).

The land-related institutions of relevance to LDN were examined in relation to the Act of Parliament establishing them and their mandates and activities/ functions. These included; Ministry of Food and Agriculture (MoFA); Ministry of Environment, Science, Technology and Innovation (MESTI) / Environmental Protection Agency (EPA); The Commissions of Land, Water, Forestry and Minerals; Ministry of Lands, Forestry and Mines (MLFM) and National Development Planning Commission.

The strengths of the country's legal environment for the implementation of LDN include: i) recognition by the 1992 Republican Constitution of Ghana of the need for the state to take appropriate measures to protect and safeguard the natural environment for posterity; ii) existence of Acts governing Land and Soil Conservation, mining activities, control and prevention of bushfires and sustainable water use for various purposes. Among the weaknesses are; i) the limited scope of the Land and Soil Conservation Act; ii) multitude of laws and regulations, often contradictory or outdated; iii) weak enforcement of and compliance with environmental laws due to weak capacity; and iv) inefficient and non-transparent system of land titling and tenure insecurity.

The opportunities to improve the legal environment reside in the advocacy of the country's 2018 – 2021 Medium Term National Development Policy Framework for : i) development and / or implementation of policies / regulations that promote the generation and conservation of biodiversity ; ii) enhancement of policy and regulatory framework and coordination among key Government Agencies and other stakeholders to improve the management of the environment and natural resources; iii) enact and enforce Legislative Instrument on tree tenure; iv) harmonize legal and regulatory instruments for strategic management and use of water resources; review and update land policy; and vi) harmonize existing laws and regulations on land. The major threats involve; i) the discovery of new mining sites by illegal miners leading to increased land degradation hotspots; and ii) uncontrolled illegal exploitation of natural resources, undermining the effectiveness of legislative provisions to address land degradation.

The strengths of the Institutional environment include: i) all the land-based Ministries relevant to the implementation of LDN are established by law and Acts which give them legal backing and specific mandates to operate in the country and all of which include aspects of LDN particularly sustainable management of natural resources; ii) existing Ministries having oversight responsibility for specific agencies and department with direct or indirect roles in the integrated management, sustainable development and protection of land, water and other natural resources; and iii) existence of a working National Sustainable Land Management Committee.

Institutional weaknesses, include, among others: i) weak capacity for dealing with land issues, ii) inadequate trained manpower in sustainable land and water management (SLWM); iii) duplication of roles and responsibilities among institutions with, sometimes conflicting mandates for land management and utilization; and v) over-dependence on donor funds for in-country management of natural resources.

Opportunities for improving the institutional environment include; iv) benefits from training in SLM and LDN; ii) buying into the principles and processes of LDN to facilitate coherence of sector policies / strategies and mandates for enhanced coordination of SLM activities; iii) attraction of investment from local businesses and international funding sources and programme for SLM activities; iii) attraction of investment from local businesses and international funding sources and programmes for SLM activities. Threats to enhanced institutional environment for

LDN implementation include; i) adverse trend in global financing; ii) reduction / withdrawal of donor funds for the implementation of natural resources management programmes; iii) poor resource availability to support LDN implementation; iv) inadequate budgetary allocation from Government for SLM activities; and v) inadequate knowledge and understanding of the principles and concepts of LDN.

3.3 LDN Baseline.

Tracking progress in the achievement of the country's voluntary targets for the realization of LDN by 2030 required the establishment of baselines to serve as reference for monitoring the performance of the LDN indicators. These are; i) land cover; ii) land productivity [metric: net primary productivity (NPP)]; and (iii) carbon stocks below and above ground [metric: soil organic carbon (SOC)]. The establishment of the baselines was based on the change analysis in the indicator values over year 2000 and 2010, using Tier 1 default data derived from global sources. The values (Annex 3) of the baselines, which doubled as the targets for achieving LDN, are the same as those presented in section 3.1 under the trend and drivers analysis for the LDN indicators at the national and regional levels. These comprise: i) area of forest lands converted to shrubs, grasslands and sparsely vegetated areas; and croplands that need to be **reversed / restored** to forest lands; ii) areas of forest lands; shrubs, grasslands and sparsely vegetated areas; and crop lands that have undergone productivity decline and requiring **rehabilitation / restoration**; and (iii) forestlands;, shrubs, grasslands and sparsely vegetated areas; and croplands remaining stable with unstressed and increasing productivity requiring measures for **avoiding / preventing** degradation.

4 Setting LDN Targets

4.1 LDN Targets

As a participant in the LDN TSP, Ghana voluntarily set her targets to achieve LDN by 2030. The targets define what the country desires to achieve in terms of halting and reversing land degradation and restoring degraded lands through a wide range of possible measures. The baseline values informed the targets set for the LDN indicators, which have been disaggregated from the national through regional to district levels. In this report, only the specific targets at the national level are presented. The targets at the regional and district levels indicating land degradation hotspots for interventions are detailed out in specific reports (Annex 6).

Ghana's LDN targets to **avoid**, **reduce** and **reverse** land degradation at the national level listed below should be accompanied by sustainable management of resources:

- Reforest 882.86 km^2 of converted forest into other land use / cover types and rehabilitate / restore all abandoned illegal mineral mining and sand winning by 2030.
- Improve productivity and soil organic carbon stocks in 18475.96 km^2 of croplands by 2030.
- Rehabilitate / restore 5107.70 km^2 of degraded forest, including abandoned legal and illegal mineral mining sites for enhanced productivity by 2030.
- Rehabilitate / restore 4593.39 km^2 of degraded shrubs, grasslands and sparsely vegetated areas for improved productivity and reduction in bush / wild fires by 2030.

- Reduce conversion of 45079.72 km^2 of remaining forest to other types of vegetation and halt all illegal mineral mining activities by 2030.
- Increase soil organic carbon of degraded croplands and rangelands from 1.20 % to 2.0 % by 2030.

4.2 Associated Measure to Achieve LDN

The drivers of land degradation informed the measures required to address the identified types of degradation. These consist mainly of technical and policy measures. The technical measures, addressing the direct drivers of land degradation, comprising the essential elements of sustainable management (SLM), sustainable landscape management (ILM) and sustainable forest management (SFM) are broadly classified as agronomic, vegetative, structural and management measures.

The policy measures mainly address the indirect drivers of land degradation, such as land tenure, education, governance, and draws on the outputs of the legal and institutional environment assessment for LDN implementation. These measures are presented in Annex 4.

The SLM and SFM measures include those that conserve soil fertility (nutrients, organic matter), minimize soil disturbance and erosion, conserve water, and enhance productivity among others include: i. judicious chemical inputs; ii. Reduced/zero tillage; crop rotation, retaining residues, green manure cropping, organic amendments (manure, compost); agroforestry, intercropping, contour bunds, vegetative barriers; reforestation rehabilitation and restoration of degraded lands involving natural regeneration and enrichment planting.

Policy, institutional and legislative measures include: reform and implement tree tenure and access rights; land tenure reforms for security of tenure, increase capacity for enforcement of environmental laws, (forestry, mining), create enabling environment for the establishment and maintenance of fuelwood plantations, pursue strict enforcement of bye laws on bushfires and hunting, review bush fire law to accommodate its deficiencies and improve capacity for its implementation and capacity building in all aspects of SLM, SFM Institutional Strengthening for research and manpower training in sustainable natural resource management.

5 Achieving LDN

5.1 Leverage Already Achieved

Discussions on achieving LDN leverage with the identified LDN entry point entities have proceeded at the level of one-on-one and LDN and Sustainable Land Management (SLM) workshops. In all cases, the general consensus is that the opportunities identified are highly promising, but more work needs to be done in reviewing the entire scope of the identified projects and national agenda (e.g. objectives, strategies, activities, outputs, outcomes, funding, synergies and coherence) to facilitate effective mode of LDN integration. The moderate achievements so far made include:

- The capture of SDG 15 is in Section 3A of the Medium-Term National Development Policy Framework (2018-2021) under its sub-goal: “protect, restore and promote-sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification and halt and reverse land degradation and halt biodiversity loss” having

policy objectives and strategies encompassing several components of LDN. This has resulted from discussions with the National Development Planning Commission, which coordinates the formulation of national development policies and their implementation and mandated to assume the lead role in incorporating the SDGs into national plans.

- The mainstreaming of the SDGs and LDN targets into Ghana Strategic Investment Framework for Sustainable Land Management as one of the major objectives in the currently on-going review of the framework for upscaling and funding.
- Ghana is among the eight target countries for the EU-funded project: "Reversing Land Degradation in Africa through Scaling-up EverGreen Agriculture" implemented jointly by the Economics of Land Degradation (ELD) Initiative and the World Agroforestry Center (ICRAF). The scoping studies have been done and selected members of the LDN working Group, including the Focal Point and LDN Consultant, have been invited to the ELD-Initiative Kick-off Workshop on 31-01-2018. The aim of the project is to build on existing national engagement towards fighting land degradation and achieving SDG 15.3 (LDN) by offering a field-tested framework to establish economic arguments for decision making through cost-benefit analyses of the land degradation phenomena and options of sustainable land management
- The UNCCD Focal Point is currently engaged in active discussions with the IUCN on a joint LDN project development in the northern dry lands of Ghana.
- A discussion with the World Bank on the feasibility of mainstreaming LDN into the ongoing SLWMP indicated the possibility of preparing and submitting for funding consideration, an upscaled SLM project in the form of a transformative LDN Project.

5.2 LDN Transformative Projects and Programmes Opportunities Identified.

There are several projects and programmes, some on going and other in preparation in Ghana, which share the features of LDN transformative projects and programmes. The five common features are: i) contribute to the achievement of LDN targets; ii) deliver multiple benefits; iii) scale-up what works; iv) enhance national capacities; and v) leverage innovative financing, including private sector. The identified in-country projects which exhibit aspects of the above attributes of LDN projects are briefly described in this section and summarized as ongoing and projects in design in Annex 5.

1. Sustainable Land and Water Management Project (2016 – 2020)

The project is a World Bank / Ghana Government initiative to upscale Sustainable Land and Water Management (SLWM) in the three northern Regions using integrated landscape management approach and expected to last till 2020.

The project has the following three components:

1. Capacity building for integrated spatial planning
2. Land and water management
    - Systems, capacity and monitoring
    - Implementation of SLWM in micro-watersheds
    - National SLM and payment for environmental services (PES) monitoring
    - Management of Riparian and other Biological corridors
3. Project management and coordination

The Project is in its third phase with the following expanded scope and coverage: i. resilience and food security by increasing the diversity of smallholder farming systems, ii. Creating more Community Resource Management Areas (CREMA); iii. Promoting equity and inclusion of vulnerable and marginal groups; and iii. Enhancing local institutions in the three regions of northern Ghana.

2. **Forest Investment Programme (2012 – 2020)**

The FIP seeks to support Ghana's effort to reduce emissions from deforestation and forest degradation (REDD+) by financing activities to address the drivers of deforestation and degradation. The objective is to achieve transformational impact, by reducing carbon emissions, enhance forest carbon stocks and deliver co-benefits. The FIP has three main projects. These are: i) Reducing pressure on natural forest through an integrated landscape approach and increasing wood production and carbon stocks through rehabilitation of natural forest (World Bank Fund); and iii) Engaging the private sector in REDD+ by developing industrial and fuel wood plantations.

ii. Engaging local communities in REDD+/Enhancing Carbon Stocks and focusing on promoting Climate SMART agriculture including cocoa production based on conservation and sustainable management of natural forest (AfDB)

3. **Ghana Commercial Agriculture Project (GCAP) (2012 -2019)**

The objective of the project is to increase access to land, private sector finance, input and output markets by smallholder farmers from private public partnership (PPP) in commercial agriculture in the Accra Plains and the Savanna Accelerated Development Authority (SADA) zone.

The project has four components: i) strengthening investment promotion infrastructure, facilitating secure access to land; ii. Securing PPPs and smallholder linkages in the Accra Plains; iii) Securing PPPs and smallholder linkages in the SADA zone; and iv. Project management, monitoring and evaluation.

4. **Reversing Land Degradation in Africa through Scaling-up Ever-Green Agriculture (EU – Funded) (2017 – 2020).**

The Project aims to improve livelihoods, food security and climate change resilience, by restoring ecosystem services. The target countries are Ethiopia, Ghana, Kenya, Niger, Rwanda, Senegal and Somalia. The action is financed by the European Commission and co-financed by German Federal Ministry for Development and Economic Cooperation (BMZ) and will be carried out jointly by the Economics of Land Degradation (ELD) Initiative and World Agroforestry Center (ICRAF).

A kick-off-Workshop was held in Ghana on 31 January, 2018 to find possible cooperation opportunities and to discuss feasible approaches for the valuation of land and land-based ecosystem services in the course of the ELD activities in Ghana. The UNCCD NFP and selected members of the LDN Working Group participated in the Workshop.

5. The Ghana REDD+ Programme (2016 – 2035)

The vision of the Reduction of Emission from Deforestation and Forest Degradation plus conservation, sustainable forest management and enhancement of forest carbon stocks (REDD+) is: To significantly reduce emissions from deforestation and forest degradation over the next twenty years whilst at the same time addressing threats that undermine ecosystem services and environmental integrity in order to maximize co-benefits from forests. The five main components are: i) Avoided Deforestation; ii) Avoided Degradation; iii) Carbon Stock Enhancement; iv) Sustainable Forest Management; and v) Biodiversity Conservation

6. Ghana's Intended Nationally Determined Contribution (INDC) (2020 – 2030)

The INDC has 20 mitigation and 11 adaptation programmes of actions in 7 priority economic sectors including sustainable land use and food security, sustainable forest management and sustainable energy security. Ghana's emission reduction goals is to unconditionally lower its Green House Gas (GHG) emissions by 15% relative to business as usual (BAU) scenarios emission of 73.95 Mt CO_2e. With external support, an additional 30% reduction is envisaged. The base emission value is 19.53 Mt CO_2e in 2010.

7. Adaption Fund Project: Increased Resilience to Climate Change in Northern Ghana through the Management of Water Resources and Diversification of Livelihood.

The Project is implementing three out of the ten national priorities for climate change as outlined in the National Climate Change Adaptation Strategy (NCCAS).

The main objective is: To enhance the resilience and adaptive capacity of rural livelihood to climate change impacts and risks on water resources in the three northern regions. The components are: i) water resources management and planning under climate change; ii) community level implementation of climate resilient water resources management activities; and iii) diversification of livelihoods of rural communities under climate change.

8. African Forest Land Restoration Initiative (AFR 100)

The AFR 100, which is a country led initiative to restore 100 million hectares of deforested and degraded landscapes across sub-Saharan Africa, by 2030, includes Ghana. Ghana has committed to restore 2 million hectares of degraded land in northern Ghana, which is a land degradation hotspot, rich in biodiversity that is under severe threat.

9. Public – Private Partnership for Restoration of Degraded Forest Reserves (2016 – 2020)

The objective of the project is to rehabilitate degraded forests at scale through an innovative public-private partnership. The project mobilizes concessional loans, climate finance and private sector investments to reduce emissions from deforestation and forest degradation promote sustainable forest management and enhance forest carbon stocks. Supported activities include: i) Scaling up forest rehabilitation in Ghana by an additional 6,700 ha by establishing a sustainable commercial forest plantation composed of 10% indigenous tree species and 90% teak; and ii) Establishing the plantation on degraded land that has been acquired through a 50-year renewable

land lease accompanied by tripartite commercial benefit sharing agreements between the Government of Ghana, local communities and the project promoters.

10. Ghana Strategic Investment Framework (GSIF) for Sustainable Land Management (SLM) (2011 – 2025)

GSIF is a programme adopted to address land degradation issues and promote SLM in a holistic and coordinated manner. It is designed to create the enabling environment for policy development and incentives, knowledge generation and dissemination, promotion, adoption and up-scaling of SLM practices.

The goal is to: Support the country's priorities in improving natural resource – based livelihood by reducing land degradation

The objective is to: Mainstream and scale-up sustainable land management decisions, secure ecosystem- services, and improve rural livelihoods.

The current document is the revised 2009 – 2015 document, which has mainstreamed the country's LDN Targets.

The components of the GSIF are: i) Investment in field-based programmes and projects; ii) Strengthening national, regional, districts and community coordination on SLM; iii) Building the capacity of the public and private sector SLM related services providers; iv) Improving the enabling policy, legal, institutional and financial environment for SLM; v) Building the GSIF knowledge base; and vi) Management and implementation of the GSIF.

Each of these components is broken into sub – components with requisite practical activities elaborated.

11. IUCN Project:

Sustainable Use of Terrestrial Ecosystems to Enhance Livelihoods in the Northern Savanna Ecological Zone of Ghana.

The project is at its concept-note preparation stage.

6 Conclusion

6.1 Overall Achievements of the LDN Target Setting Process

The following achievements have been made and documented (Annex 6) as a result of the LDN Target Setting Process:

- Capacity built in the use of Tier 1 default data of 2000 and 2010 and the LDN process methodology provided by LDN TSP for setting LDN targets to achieve LDN by 2030.
- Output and outcomes produced through the LDN target setting process include the following:
  - Trends and drivers of land degradation in Ghana established.
  - Baselines established for monitoring the progress of the three recommended LDN indicators (land cover, land productivity and carbon stocks) towards achieving LDN.

- National Voluntary LDN targets set with measures to achieve LDN.
- The magnitude and spatial extent of deforestation / forest degradation and productivity decline in the country's forest land, grasslands and croplands quantitatively established at the national, regional and district levels.
- Land degradation hotspots identified at the regional and district levels for priority interventions.
- The appropriate application of the three LDN response hierarchy (avoid > reduce > reverse) in addressing the different types of land degradation identified.
- The requisite policy, legal and institutional enabling environment for the implementation of LDN identified.
- LDN leverage and transformative project opportunities identified and documented
- High level note of measures to achieve the national LDN targets endorsed by the Government of Ghana (Annex 6)

6.2 Lessons Learned from the LDN Target Setting Process

The major lessons learned from the LDN Target Setting Process include the following:

- The process required to sustainably address the problems of land degradation and its scourge on the socio-economic development of our country require the active involvement of and ownership by all relevant stakeholders, backed by an ensured high level government leadership
- The global recognition of LDN (SDG 15, target 15.3) and the consequent setting of baselines with monitoring indicators and targets to achieve LDN helped in making the objective of halting and reversing land degradation explicit and convincing, and easier to communicate and engage stakeholders at both national (e.g. government, civil society, researchers) and international (e.g. Development Partners and funding agencies) levels.
- The LDN target setting process showed that LDN could be used as an instrument for establishing coherence among the many existing duplicated policies and mandates of our land related Ministries, Agencies and Departments (MDAs) involved in sustainable land resources management and for fostering the linkage between the core objectives of the three Rio Conventions (UNCCD, UNCBD and UNFCCC) towards a unified and bold action to holistically address environmental degradation and accelerate the achievement of the Sustainable Development Goals (SDGs).
- The acquisition of the country's specific default data and the technical assistance from UNCCD /GM, which worked closely with the country's LDN Consultant, the National Focal Point and experts, facilitated a better data interpretation and the setting of baselines and more structured and ambitious targets to achieve LDN among the identified land cover / use types
- The communication and dissemination of the endorsed targets and measures by the Government to both national and international stakeholders commit and enhance the resolve of the Government to achieve the set targets (Annex 7).
- The LDN targets setting is recognized as a facilitator in identifying opportunities for: i) leveraging LDN implementation through establishing synergies with ongoing projects / programmes, accompanied by creation of the requisite legal and institutional enabling environment; ii) LDN transformative projects / programmes; and iii) tapping into existing and emerging innovative financing facilities to implement LDN projects / programmes.

ANNEXES

Annex 1: Ghana National LDN Working Group

Institution	Representation	Official Position
Ministry of Environment, Science, Technology and Innovation (MESTI)	Mr. Fredua Agyemang	Director
	Ms. Ivy Lomotey	Technical Officer (SLWMP)
Environmental Protection Agency (EPA)	Mr. Isaac Charles Acquah Jnr.	Chief Programme Officer (Sustainable Land and Water Management Project, SLWMP)
	Mr. Ebenezer Appah-Sampong	Deputy Executive Director
	Mr. John Pwamang	Ag. Executive Director
	Mr. Kyekyeku Yaw Oppong-Boadi	Director NFP (UNFCCC)
	Mr. Asher Nkegbe	Regional Director, Upper East Region; NFP (UNCCD)
Ministry of Food and Agriculture (MoFA)	Mr. Kingsley Amoako	Assistant Director
Forestry Commission (FC)	Mr. Oppon Sasu	Executive Director, Forest Services Division
	Mr. Yaw Kwakye	Regional Director, Central Region
	Mr. C. C. Amankwah	Director Wildlife Services Division (FC)
	Mr. Hugh C. A. Brown	Director Plantations
Ministry of Land and	Mr. Joseph Osiakwan	-

Natural Resources (MLNR)		
Kwame Nkrumah University of Science and Technology (KNUST)	Prof. Sampson K. Agodzo Prof. Charles Quansah Mr. .Thomas Adjei-Gyapong	Prof. Agric. Engineering (Irrigation) LDN Consultant (Ghana); UNCCD Science and Technology Correspondent (STC) Lecturer, LDN Data Analysis Team; Land Use Planning.
Council for Scientific and Industrial Research (CSRI)	Dr. Joseph Fening Mr. Eric Asamoah	Director Technologist; LDN Data Analysis Team-GIS
Water Resources Commission	Mr. Enoch Asare	Director (Planning)
Energy Commission	Mr. Eric Ofori-Nyarko	Director
National Development Planning Commission (NDPC)	Mrs. Sandra Amankwa	Principal Planning Analyst
Ministry of Finance and Economic Planning (MoFEP)	Mr. Lawrence Agyekum Nyanor	-
Hat of Foundation (HATOF)	Mr. Samuel Dotse	Chief Executive officer (CEO)
Water Research Institute	Dr. Joseph Ampofo	Research Scientist
Friends of the Earth	Mr. George B.K. Awudi	CEO
Eco Planet Bamboo Ltd.	Mr. Camille Rebelo	CEO
Form Ghana Ltd	Mr. Willen Fourie	CEO
World Bank (Environment and Natural Resources)	Mr. As Ferachew Abate Abebe Mr. Darren Brazeau	Environmental specialist Second secretary (Development)

Annex 2.: Dates of Working Group Meetings and Workshops.

LDN Working Group meetings were organized to coincide with the dates of the following workshops:

- **LDN Inception Workshop: National Target Setting to Achieve land degradation Neutrality in Ghana.**
  Venue: Tang Palace Hotel, Accra
  Date: January 20, 2017.

The objectives of the LDN Inception workshop were to: i. launch the LDN Target Setting Process; ii. Introduce Workshop participants to the concepts of LDN and methodologies proposed to be used in the LDN Target Setting Process; iii. Identify opportunities for developing the National LDN TSP Plan; iv. Inaugurate the National LDN TSP Working Group; and v. familiarize Workshop participants with the LDN TSP road map.

The inception Workshop brought together from diverse fields and sectors expected to play varying but integrated roles to achieve the goal of LDN. The participants had the opportunity to familiarize with the concept of LDN and the proposed methodological operational approaches to achieve the LDN target setting.

A major task accomplished by the Representative of the Ministry of Environment, Science, Technology and Innovation was the inauguration of the LDN TSP Working Group charged with the responsibility of steering the LDN target setting process and promoting LDN mainstreaming, presentations on various aspects of LDN were made, followed by discussions and group works on WHY LDN matters; WHAT to Leverage; and WHO to engage to create leverage. The outputs were used to prepare the Leverage Plan for the country's LDN TSP.

- **National LDN Basline and Target Setting and Validation Workshop**
  Venue: La Palm Royal Beach Hotel, Accra
  Date: April 11 and 12, 2017.

  The objectives of the two-day Workshop were to: i. Reiterate the concept and main components of the LDN target setting process to participants; ii. Present a draft country LDN Leverage Plan for inputs from participants; iii. Present a draft country LDN Baseline Report for stakeholder inputs, refinement and validation; iv. Familiarize Workshop participants with essence of assessing land degradation trends, drivers and hotspots identification in the LDN TSP; v. Discuss the Draft national LDN Targets for stakeholder inputs, finalization and validation; vi. Provide opportunity for the National LDN TSP Working Group and LDN Data Analysis Team to meet and discuss their terms of reference (TOR) and modus operandi.

  The output of the Workshop included the validation of draft reports on Leverage Plan, Baseline, Trends, Drivers and Measures and Targets.

Annex 3: LDN Baseline Table

Summary Tables	Land Area (2000)	Land Area (2010)	Net Change in Area (2000 - 2010)	Net Land Productivity Change (sq km, 2000 - 2010)						Soil Organic carbon 2000
Land-Use Category	**km^2**	**km^2**	**km^2**	**Declining , 1**	**Early Stage of Declining , 2**	**Stable but stressed , 3**	**Stable not stressed , 4**	**Increasing , 5**	**No Data**	**t/ha**
Forest land	51,490.17	50,607.31	(882.86)	803.28	1,750.78	2,553.64	12,179.86	32,899.86	419.89	41
Shrubs, grasslands and sparsely vegetated areas	63,129.55	63,853.78	724.23	672.45	1,582.93	2,338.01	27,087.90	31,404.44	845.05	43
Croplands	115,615.50	115,774.38	158.88	1,956.53	6,578.17	9,940.26	61,043.13	35,142.01	1114.28	43
Wetlands and water bodies	6,909.50	6,909.25	(0.25)	233.96	134.47	119.39	393.33	176.15	5851.95	40
Artificial Areas	1,604.75	1,604.75	-	534.87	239.15	134.10	504.90	130.39	61.34	33
Bare land and other areas	71.30	71.30	-	9.70	4.11	0.88	43.46	0.15	13.00	42
SOC average (ton/ha)										42.415
Percent of total land area (%)				1.8	4.3	6.3	42.4	41.8	3.5	
TOTAL (km^2)	**238,820.77**	**238,820.77**		**4,210.79**	**10,289.61**	**15,086.28**	**101,252.59**	**99,753.00**	**8305.51**	

Annex 4: Drivers of Land Degradation and Associated measures for control.

NEGATIVE TREND	DRIVERS		MEASURES
	Direct	Indirect	
Conversion of forest lands to shrubs, grasslands and sparsely vegetated areas.	• Illegal logging and chainsaw activities	• High local and international demand for wood products (timber, building materials etc) • Poor harvest and weak regulatory mechanism Weak enforcement of forest laws	• Reforestation with ecologically suitable exotic and local species, and natural regeneration • Rehabilitation and restoration of degraded landscapes through plantations development and community forestry • Increase capacity for enforcement of forest laws Provide enabling environment to attract private investment in industrial plantation
	• Ineffective forest management practices	• Ineffective mechanism for timber rights allocation • Perverse tree tenure regime Insufficient involvement of local communities in forest management • Inadequate knowledge of sustainable forest management practices. • Inequitable benefit sharing arrangements • Weak regulation of forest management practices.	• Reform and implement tree tenure and access rights • Promote collaborative forest management to actively involve communities • Promote off-reserve community resources management (CREMA) opportunities Implement reserve by reserve management plans. • Promote training, research and technology development that support sustainable forest management (SFM) as well as its uptake Design and implement robust and transparent financial structures for equitable distribution of benefits.

	• Mining o Inside forest reserves o Illegal small-scale mining (locally referred to as (Galamsey)	• Increasing legal and illegal surface mining activities • Increasing demand and encroachment by industrial artisanal and small-scale miners on forest lands • Increasing population in mining areas • Weak enforcement of forest and mining laws • Limited long-term livelihood opportunities in the mining areas.	• Regulate and implement transparent allocation of mining concessions • Halt illegal mining • Intensify on-going reforms to regulate mining activities and increase capacity for enforcement of forest and mining laws • Rehabilitation and vegetation restoration of degraded mined sites after closure of mines • • Promote alternative livelihood support systems other than mining.
	• Fuelwood and charcoal production.	• High rural and urban demand • Open access nature of natural resources • Inefficient production systems • Insufficient supply of alternative sources of energy (e.g. Liquefied Petroleum Gas-LPG)	• Improve supply, distribution and affordability of LPG at both urban and rural areas. • Create enabling environment for the establishment and maintenance of fuel wood plantations • Promote the establishment of community/family woodlots • Improve efficiency in fuelwood use and carbonization methods • Support Agricultural Extension Units of the Ministry of Food and Agriculture (MoFA) and the Forest Service Department (FSD) to create awareness on the need for sustainable supply, production and utilization of woodfuels • Collaborate with FSD to enforce regulations on the control of fringe

			communities in the harvesting and sale of the woodfuel in the forest reserves • Promote collaborative forest management to involve local communities. • Promote and further develop the piloted improved traditional earth kiln method of charcoal production • Promote the use of energy efficient forms of stoves that use less wood and charcoal Train local artisans to produce the improved stoves.
	• Wildfires o Slash-and-burn agriculture o Cattle ranching o Hunting	• Fire as a tool for land preparation for farming and hunting • Low capacity to control fire • Uncontrolled use of fire for grassland management for fresh fodder production for livestock • Prevalence of dry vegetation in low rainfall agroecological zones • Celebration of traditional fire festivals in the savanna zone • Weak capacity to implement anti-bush fire law (PNDC Law 229) • Poor recognition of traditional rulers in the implementation and enforcement of the bush fire law	• Increase awareness of impact of bush fires through educational campaigns • Promote the adoption of alternative methods (e.g., zero tillage)to the use of fire for land preparation for farming • Increase capacity and promote networking of communities for prevention and control of fire in their watershed areas. • Pursue strict enforcement of bye laws on bushfires and hunting laws • Intensify the formation and training of community antibushfire committees and squads and strengthen them to discharge their functions. Equip National Fire Service adequately to play its training role as well as prevention and control of fire outbreaks. • Review PNDC Law 229 to accommodate its deficiencies and improve capacity for its implementation • Recognize and institutionalize the central role of traditional rulers in mobilizing their subjects for bushfires control. • Train communities on the domestication of small mammals (e.g., grasscutters and rabbits) to reduce hunting activities • Promote sustainable rangeland management (e.g., early burning) • Support District Assembles to develop and implement incentive structures to reward communities with success stories of bushfire control.

	• Overgrazing	• Increasing livestock population • Encroachment on rangelands by influx/ transhumance of large herds of cattle from neighboring countries • Extension livestock rearing and grazing system degrading pastures lands and fodder plants • Lack of capacity for rangeland management Insufficient involvement of communities in the management of the savanna ecosystems • Weak enforcement of economic Community of West African States (ECOWAS) protocols on transhumance	• Promote and support community-based rangeland management through reseeding of rangelands with leguminous and pasture seeds • Support communities to develop and manage pasture lands and fodder banks for intensive livestock production • Train and engage manpower in rangeland management to strengthen the extension activities of the FSD and MoFA. Integrate forage seed cropping into the farming system • Promote and assist communities in the development of storage systems for fodder, crop residues and agricultural by products to support intensive livestock production • Assist communities in the provision of water management systems (e.g., weirs, hand dug wells, rain water harvesting, etc.) to support livestock watering, household use and dry season gardening and crop production.
Conversion of forestlands to croplands	• Food crop farming under slash-and-burn agriculture	• Increasing population, rural poverty and the need to secure livelihoods • Shifting cultivation as a practice for soil regeneration • Limited adoption and use of improved technologies in farming systems • Slash-and-burn farming practices.	• Facilitate community basedland use planning to avoid deforestation and degradation • Promote agricultural intensification practices for increased productivity per hectare • Integrate trees into farming systems for improved soil fertility and additional income • Support applied research aimed at increasing crop yields per hectare Increase farmer access to finance and risk reduction mechanisms.

	• Tree crops (cocoa, rubber, oil palm, mango , citrus, coffee, cashew)	• High local and international demand for cash crops • Extensive practices and low yield under poor productive soils • Short-term higher yields of shade crops (e.g., cocoa) under no-shade than shade conditions • Perception that cocoa does not need shade • Selective perverse incentives (e.g., cocoa inputs subsidies/lowering of inputs tariffs)	• Promote intensification rather than extensification of agriculture into forest lands through enhanced productivity and community land use planning • Facilitate community-based land use planning to avoid deforestation ad degradation • Increase farmers awareness on the need for shade trees for shade crops for long-term productivity (e.g., cocoa) • Increase access to information and technical information • Remove financial incentives that encourage forest land conversion • Increase farmers access to finance and risk reduction mechanism
Forest showing signs of decline and declining productivity and stable but stressed productivity. 22	Over-exploitation of vegetation, soil and water resources of forest lands	• Population growth and increased demand for wood products • Rural poverty and unsustainable exploitation of forest products and ecosystem resources (soil, water etc) for livelihood support • Poor land clearance and farming methods involving the use of slash-and-burn for crop production in forest lands resulting in erosion, soil fertility decline and poor yields • Degradative surface mining, sand and gravel winning activities in forest lands without vegetative restoration and rehabilitation measures	• Rehabilitation and restoration of degraded sites through enrichment planting • Promote establishment and management of community/family woodlots • Promote SLM/SFM to conserve soil and water resources, and to enhance carbon stocks, soil fertility and productivity • Increase capacity for the enforcement of forest and mining laws. • Promote collaborative forest management to actively involve communities • Halt illegal mining • Support community-based land use planning for sustainable watershed management • Facilitate the establishment of alternative non-forest-based livelihood support systems.

		• Weak enforcement of forest laws and regulations • Insufficient community involvement in sustainable forest management (SFM) • Inadequate alternative non-forest based livelihood support opportunities	
• Shrubs, grasslands, and sparsely vegetated areas having declining productivity, early signs of Productivity decline and stable but stressed productivity.	• Depletion of savanna woodlands and grass vegetation, soil erosion and fertility decline.	• Rural poverty and increased population over-exploiting savanna woodland vegetation to secure livelihood through firewood and charcoal production. • Increasing cattle and small ruminant population overgrazing and browsing grassland vegetative resources Slash-and-burn agriculture resulting in loss of organic matter and nutrients and the requisite cover for erosion control and water conservation. • Insecure land tenure arrangement leading to the prevalence of nutrient depletive farming practices devoid of replenishment and adoption of SLM • Inadequate land use planning with its associated legal and institutional framework for the practice of SLM/ILM.	• Promote alternative livelihood support systems through non-wood forest products (e.g., honey, shea butter, gum Arabic etc) • Create awareness and promote the practice of climate-smart agriculture and SLM/ILM /SFM. • Reform land tenure arrangements to support the adoption and practice of SLM practices • Train communities in the principles and practices of SLM/SFM/ILM • Assist communities to develop and implement land use plans for the sustainable management of rangelands • Rehabilitate degraded lands through natural regeneration enrichment planting, and upgrading of species diversity and richness • Promote collaborative rangeland management to involve communities • Increase capacity for bush fire prevention and control and enforce bushfire laws.

		• Insufficient involvement of community in rangeland management • Climate variability and change adversely impacting rainfall and soil moisture storage for improved productivity • Prevalence of bushfires/inefficient enforcement of bush fire laws.	

Annex 5: LDN Transformative Projects and Programmes Opportunities identified.

Project	Implementing Entity	Executing Entity	Funding Source	Fund Amount US$	Duration
1. Sustainable Land and Water Manament(SLWM)	World Bank	MESTI/EPA	GEF/World Bank	12.77 million	2016-2020
2. Forest Investment Programme	World Bank	MLNR/MF/ MESTI	World Bank	50 million	-2020
3. Adaptation Fund Project: Increased Resilience to Climate Change in Northern Ghana through the Management of Water Resources and Diversification of Livelihoods	UNDP	MESTI/EPA	Adaptation Fund	8.3 million	2016-2020
4. Ghana Commercial Agriculture (GCAP)	World Bank	MoFA	World Bank	100 million	2012-2019
5. Ghana REDD+ Programme	World Bank	MESTI/EPA	FCPF/ World Bank VPA-FLEGT CF FIP Other commitments Carbon Fund /ERP Chocolate Industry Implementation of climate smart cocoa	8.4 million 4 million 0.65 million 50 million 50 million 2 billion	2016-2035
6. Public-Private Partnership for Restoration of Degraded Forest Reserves	Ghana Forestry Commission Form Ghana Ltd		GoG Africa Development Bank Climate Investment Funds (CIF)-Forest Investment Programme	24 million	2016-2020
Project in Design					
7. Ghana Intended Nationally Determined Contributions		MESTI / EPA	Domestic Sources (US$6.3 billion) International Sources (US$ 16.3) billion	22.6 billion	2020-2030

			GCF International market Private capital Other Multilateral funds		
8. AFR 100	World Bank	MESTI/EPA	World Bank	-	-
9. Public-Private Partnership for Restoration of Degraded Forest Reserves	Ghana Forestry Commission Form Ghana Ltd		GoG Africa Development Bank Climate Investment Funds (CIF)-Forest Investment Programme	24 million	2016-2020
10. EU – Funded Project: Reversing Land Degradation in Africa through Scaling-up Evergreen Agriculture	EU/ Economics of Land Degradation Initiative (ELD/World Agroforestry center (ICRAF).	ELD/ICRAF	EU (20.5 million Euros) co-finance by BMZ/GIZ and ICRAF – 3.94 million Euros	24.44 million Euros	2017-2020

Annex 6. List of reports submitted

1. LDN Baseline
2. LDN Degradation Trends and Drivers
3. LDN National Targets
4. LDN Target Setting Leverage Plan
5. Key Policy-Technical Measures to Achieve LDN
6. LDN Legal and Institutional Environment
7. Government High-Level Note of Measures to Achieve the National LDN Targets
8. LDN Include in Selected National Policies and Commitment
9. Identification of LDN Transformative Projects in Ghana

Annex 7. LDN Targets, measures and timelines at the national level.

Table 1: LDN Target Setting (National Level)

Negative trends	Area (km^2)	Corrective measures	LDN target	
			Area (km^2)	Time (year)
Conversion of forests into shrubs, grasslands and sparsely vegetated areas and croplands	882.86	• Reforestation with adaptable local and exotic species and natural regeneration. • Promote sustainable forest management (SFM) and collaborative forest management involvement of local communities and other relevant stakeholders with appropriate incentive structures.	-882.86	2030
Forest having declining productivity and showing early signs of decline and stable but stressed productivity.	5107.70	• Rehabilitation and restoration of degraded areas including abandoned illegal mining sites through enrichment planting and natural regeneration. • Promote SFM and collaborative forest management with active involvement of local communities and other stakeholders, with appropriate incentive structures to avoid further decline of forest.	-5107.70	2030

Shrubs, grasslands and sparsely vegetated areas having declining productivity and showing early signs of productivity decline and stable but stressed productivity.	4593.39	• Promote sustainable land and water management (SLWM) practices to avoid overgrazing and erosion and enhance soil fertility. • Promote collaborative range management involving local and transhumant cattle herders. • Develop and implement wildfire management with active involvement of local communities and other stakeholders (land owners and resource users) • Provide incentive systems to implement wildfire management plans. • Rehabilitation and restoration of degraded areas including abandoned illegal mining sites, through natural regeneration.	-4593.39	2030
Cropland having declining productivity and showing early signs of productivity decline and stable but stressed productivity.	18474.96	• Promote sustainable land and water management (SLWM) to enhance cropland productivity through agroforestry, integrated nutrients management, soil and water conservation (agronomic, soil management and structural measures) and conservation agriculture	-18474.96	2030

Annex 8: LDN Targets, measures and timelines at the Regional Level.

Table 2a – LDN Target in the Northern Region

Negative trends	Area (km^2)	Corrective measures	LDN target	
			Area (km^2)	Time (year)
Conversion of forests into shrubs, grasslands and sparsely vegetated areas, and croplands	562.05	• Reforestation with adaptable local and exotic species and natural regeneration • Promote sustainable forest management (SFM) • Promote collaborative forest management involving communities and other stakeholders with appropriate incentives structure.	-562.05	2030
Forest having declining productivity and showing early signs of decline, and stable but stressed productivity.	1630.99	• Rehabilitation and restoration of degraded areas including abandoned illegal mining sites through natural regeneration. • Promote sustainable forest management and collaborative forest management with active involvement of local communities and other stakeholders; and incentive structures to avoid further decline in productivity.	-1630.99	2030

Shrubs, grasslands and sparsely vegetated areas having declining productivity and showing early signs of productivity decline and stable but stressed productivity.	1247.22	• Promote sustainable land management (SLWM) practices to avoid overgrazing and erosion, and enhance soil fertility. Develop • and implement wildfire management plans with active involvement of communities and other stakeholders (land owners and resource users) • Provide incentive systems to implement wildfire management plans. • Rehabilitation and restoration of degraded areas including abandoned illegal mining sites through natural regeneration. Promote • collaborative range management involving local and transhumant cattle herders.	-1247.22	2030
Cropland having declining productivity and showing early signs of productivity decline and stable but stressed productivity.	613.89	• Promote sustainable land and water management (SLWM) practices that control erosion and enhance productivity through agroforestry, integrated nutrients management, soil and water conservation (agronomic, soil management and structural measures, and conservation agriculture	-613.89	2030

Table 2b – LDN Target in the Upper West Region

Negative trends	Area (km^2)	Corrective measures	LDN target	
			Area (km^2)	Time (year)
Conversion of forests into shrubs, grasslands and sparsely vegetated areas, and croplands	114.56	• Reforestation with adaptable local and exotic species and natural regeneration • Promote sustainable forest management (SFM) • Promote collaborative forest management with local communities and other stakeholders and implementing appropriate incentives structure.	-114.56	2030
Shrubs, grasslands and sparsely vegetated areas having declining productivity and showing early signs of productivity decline and stable but stressed productivity.	36.75	• Promote sustainable land and water management (SLM) practices to avoid overgrazing and erosion • Rehabilitate and restore degraded areas by natural regeneration, enrichment planting and upgrading of species diversity and richness. • Develop and implement wildfire management plans with local communities (land owners and resource users) and provision of appropriate incentives.	-36.75	2030
Cropland having declining productivity and showing early signs of productivity decline and stable but stressed productivity.	150.08	• Promote sustainable land and water management (SLWM) to enhance cropland productivity through agroforestry, integrated nutrients management, soil and water conservation (agronomic, soil management and structural measures) and conservation agriculture	-150.08	2030

Table 2c – LDN Target in the Upper East Region

Negative trends	Area (km^2)	Corrective measures	LDN target	
			Area (km^2)	Time (year)
Conversion of forests into shrubs, grasslands and sparsely vegetated areas, and croplands	19.36	• Reforestation with adaptable local and exotic species and natural regeneration • Promote collaborative forest management involving communities and other stakeholders with appropriate incentives structure.	-19.36	2030
Forest having declining productivity and showing early signs of decline, stable but stressed and stable not stressed productivity.	80.69	• Rehabilitation and restoration degraded areas through enrichment planting and natural regeneration. • Promote collaborative forest management involving communities, government and other stakeholders with appropriate incentive structures to avoid further decline of forest.	-80.69	2030
Shrubs and grasslands and sparsely vegetated areas having declining productivity and showing early signs of productivity decline, stable but stressed and stable not stressed productivity.	2913.60	• Promote sustainable land management (SLM) practices to avoid overgrazing and erosion • Develop and implement wildfire management plans with active involvement of communities (land owners and resource users) • Provide incentives systems to implement wildfire management plans.	-2913.60	2030
Cropland having declining productivity and showing early signs of productivity decline, stable but stressed and stable not stressed productivity.	4619.87	• Promote sustainable land and water management (SLWM) to enhance cropland productivity through agroforestry, integrated nutrients management, soil and water conservation and conservation agriculture	-4619.87	2030

Table 2d – LDN Target for Brong Ahafo Region

Negative trends	Area (km^2)	Corrective measures	LDN target	
			Area (km^2)	Time (year)
Conversion of forests into shrubs, grasslands and sparsely vegetated areas, and croplands	44.95	• Reforestation with adaptable local and exotic species and natural regeneration • Promote collaborative forest management involving communities and other stakeholders with appropriate incentives structure.	-44.95	2030
Forest having declining productivity and showing early signs of decline and stable but stressed productivity.	1619.27	• Rehabilitation and restoration of degraded areas including abandoned illegal mining sites through natural regeneration. • Promote collaborative forest management involving communities, government and other stakeholders with appropriate incentive structures to avoid further decline of forest.	-1619.27	2030
Shrubs, grasslands and sparsely vegetated areas having declining productivity and showing signs of early productivity decline and stable but stressed productivity.	1623.56	• Promote sustainable land and water management (SLWM) practices to avoid overgrazing and erosion • Develop and implement wildfire management plans with active involvement of communities (land owners and resource users) • Provide incentive systems to implement wildfire management plans. • Rehabilitate degraded areas through natural regeneration, enrichment planting and upgrading of species diversity and richness.	-1623.56	2030
Cropland having declining productivity and showing early signs of productivity decline and stable but stressed productivity.	2869.74	• Promote sustainable land and water management (SLWM) to enhance cropland productivity through agroforestry, integrated nutrients management, soil and water conservation and conservation agriculture	-2869.74	2030

Table 2e – LDN Target for Ashanti Region

Negative trends	Area (km^2)	Corrective measures	LDN target	
			Area (km^2)	Time (year)
Conversion of forests into shrubs, grasslands and sparsely vegetated areas, and croplands	13.06	• Reforestation with adaptable local exotic species and natural regeneration • Promote collaborative forest management involving communities and other stakeholders with appropriate incentives structure.	-13.06	2030
Forest having a declining productivity and showing early signs of declining productivity and stable but stressed productivity.	263.99	• Rehabilitation and restoration of degraded areas including abandoned illegal mining sites through natural regeneration. Promote sustainable forest management (SFM) and • collaborative forest management involving communities, government and other stakeholders with appropriate incentive structures to avoid further decline of forest.	-263.99	2030
Shrubs, grasslands and sparsely vegetated areas having declining productivity and showing early signs of productivity decline and stable but stressed productivity.	177.31	• Promote sustainable land management (SLM) practices to avoid overgrazing and erosion • Develop and implement wildfire management plans with active involvement of communities (land owners and resource users) Provide incentives systems to implement wildfire management plans. • Rehabilitation and restoration of degraded areas through natural regeneration and species enrichment.	-177.31	2030
Cropland having declining productivity and showing early signs of productivity decline and stable but stressed productivity.	3856.74	• Promote sustainable land and water management (SLWM) to enhance cropland productivity through agroforestry, integrated nutrients management, soil and water conservation and conservation agriculture	-3856.74	2030

Table 2f – LDN Target for Central Region

Negative trends	Area (km^2)	Corrective measures	LDN target	
			Area (km^2)	Time (year)
Conversion of forests into shrubs, grasslands and sparsely vegetated areas, and croplands	23.10	• Reforestation with adaptable local exotic species and natural regeneration • Promote collaborative forest management involving communities, government and other stakeholders with appropriate incentive structures.	-23.10	2030
Shrubs, grasslands and sparsely vegetated areas having declining productivity and showing early signs of productivity decline and stable but stressed productivity.	102.43	• Promote sustainable land and water management (SLWM) practices to avoid overgrazing and erosion • Develop and implement wildfire management plans with active involvement of communities (land owners and resource users) • Rehabilitate degraded areas. • Provide incentives systems to implement wildfire management plans.	-102.43	2030
Cropland having declining productivity and showing early signs of productivity decline and stable but stressed productivity.	814.93	Promote SLWM that conserve soil fertility (nutrients, organic matter), minimize soil disturbance and erosion through practices, such as, soil and water conservation, (agronomic, soil management and structural measures) zero tillage, crop rotation, residue management, agroforestry and cover crops.	-814.93	2030

Table 2g – LDN Target for Western Region

Negative trends	Area (km^2)	Corrective measures	LDN target	
			Area (km^2)	Time (year)
Conversion of forests into shrubs, grasslands and sparsely vegetated areas with declining productivity.	64.11	• Reforestation with adaptable local and exotic species and natural regeneration • Promote collaborative forest management involving communities and other stakeholders with appropriate incentives structure.	-64.11	2030
Forest having declining productivity and showing early signs of productivity and stable but stressed productivity.	1249.96	• Rehabilitation and restoration of degraded areas including abandoned illegal mining sites through natural regeneration. • Promote collaborative forest management involving communities, government and other stakeholders with appropriate incentive structures to avoid further decline of forest. • Facilitate community-based land use planning to avoid deforestation and degradation.	-1249.96	2030
		• Promote intensification rather than expansion of agriculture with measures for increased productivity.		
Shrubs, grasslands and sparsely vegetated areas having declining productivity and showing early signs of productivity decline and stable but stressed productivity.	45.04	• Rehabilitate degraded areas with species enrichment • Promote sustainable land and water management practices to avoid overgrazing and erosion. Develop and implement wildfire management with local communities and incentives structures.	-45.04	2030
Croplands having declining productivity and showing early signs of productivity decline and stable but stressed productivity.	3023.17	• Promote SLWM that conserve soil fertility (nutrients, organic matter), minimize soil disturbance and erosion through practices, such as, soil and water conservation, zero tillage, crop rotation, residue management, agroforestry and cover crops.	-3023.17	2030

Table 2h– LDN Target for Eastern Region

Negative trends	Area (km^2)	Corrective measures	LDN target	
			Area (km^2)	Time (year)
Conversion of forests into shrubs, grasslands and sparsely vegetated areas with declining productivity.	28.38	• Reforestation with adaptable local exotic species and natural regeneration • Promote collaborative forest management involving communities and other stakeholders with appropriate incentives structures.	-28.38	2030
Forest having a declining productivity and showing a declining productivity and showing	165.00	• Rehabilitation and restoration of degraded areas including abandoned illegal mining sites through natural regeneration..	-165.00	2030
early signs of productivity decline and stable but stressed productivity.		• Promote sustainable forest management (SFM) and collaborative forest management involving communities, government and other stakeholders with appropriate incentive structures to avoid further decline of forest.		
Shrubs, grasslands and sparsely vegetated areas having declining productivity and showing early signs of productivity decline and stable but stressed productivity.	534.76	• Promote sustainable land management (SLM) practices to avoid overgrazing and erosion • Develop and implement wildfire management plans with active involvement of communities (land owners and resource users) Rehabilitate degraded areas. Provide incentives systems to implement wildfire management plans.	-534.76	2030
Cropland having declining productivity and showing early signs of productivity decline and stable but stressed productivity.	2004.01	• Promote sustainable land and water management (SLWM) to enhance cropland productivity through agroforestry, integrated nutrients management, soil and water conservation and conservation agriculture	-2004.01	2030

Table 2i – LDN Target for Volta Region

Negative trends		Corrective measures	LDN target	Negative trends	
	Area (km^2)			Area (km^2)	Time (year)
Conversion of forests into shrubs, grasslands and sparsely vegetated areas with declining productivity.	33.66	• Reforestation with adaptable local exotic species and natural regeneration • Promote collaborative forest management involving communities and other stakeholders with appropriate incentives structure.		-33.66	2030
Forest showing early signs of decline and having a declining productivity stable but stressed productivity.	117.90	• Rehabilitation and restoration through enrichment planting • Promote collaborative forest management involving communities, government and other stakeholders with appropriate incentive structures to avoid further decline of forest.		-117.90	2030
Shrubs, grasslands and sparsely vegetated areas having declining productivity and showing early signs of productivity decline and stable but stressed productivity.	626.77	• Promote sustainable land and water management (SLWM) practices to avoid overgrazing and erosion • Develop and implement wildfire management plans with active involvement of communities (land owners and resource users) • Provide incentives systems to implement wildfire management plans.		-626.77	2030
Cropland having declining productivity and showing early signs of productivity decline and stable but stressed productivity.	2952.20	• Promote sustainable land and water management (SLWM) to enhance cropland productivity through agroforestry, integrated nutrients management, soil and water conservation and conservation agriculture		-2952.20	2030

Table 2j – LDN Target for Greater Accra Region

Negative trends	Area (km^2)	Corrective measures	LDN target	
			Area (km^2)	Time (year)
Forest showing early signs of decline and having a declining productivity and stable but stressed productivity.	29.20	• Rehabilitation and restoration through enrichment planting • Promote collaborative forest management involving communities, government and other stakeholders with appropriate incentive structures to avoid further decline of forest.	-29.20	2030
Shrubs, grasslands and sparsely vegetated areas having declining productivity and showing early signs of productivity decline and stable but stressed productivity.	334.56	• Promote sustainable land and water management (SLWM) practices to avoid overgrazing and erosion • Develop and implement wildfire management plans with active involvement of communities (land owners and resource users) • Provide incentives systems to implement wildfire management plans.	-334.56	2030
Cropland having declining productivity and showing early signs of productivity decline and stable but stressed productivity.	1793.22	• Promote sustainable land and water management (SLWM) to enhance cropland productivity through agroforestry, integrated nutrients management, soil and water conservation and conservation agriculture	-1793.22	2030

Annex 9: Draft measures identified for consideration by UNCCD National Focal Point and LDN working group.

NEGATIVE TREND	AREA	DRIVERS		MEASURES	AREA	TIME LINE
Conversion of forest lands to shrubs, grasslands and sparsely vegetated areas.	**km2**	**Direct**	**Indirect**		**km^2**	**Years**
	724.23	• Illegal logging and chainsaw activities	• High local and international demand for wood products (timber, building materials etc) • Poor harvest and weak regulatory mechanism • Weak enforcement of forest laws	• Reforestation with ecologically suitable exotic and local species, and natural regeneration • Rehabilitation and restoration of degraded landscapes through plantations development and community forestry • Increase capacity for enforcement of forest laws • Provide enabling environment to attract private investment in industrial plantation.	724.23	2030
		• Ineffective forest management practices	• Ineffective mechanism for timber rights allocation • Perverse tree tenure regime	• Reform and implement tree tenure and access rights • Promote collaborative forest management to actively involve communities • Promote off-reserve community resources		

			• Insufficient involvement of local communities in forest management • Inadequate knowledge of sustainable forest management practices. • Inequitable benefit sharing arrangements • Weak regulation of forest management practices.	management (CREMA) opportunities • Implement reserve by reserve management plans. • Promote training, research and technology development that support sustainable forest management (SFM) as well as its uptake • Design and implement robust and transparent financial structures for equitable distribution of benefits.		
		• Mining o Inside forest reserves o Illegal small-scale mining (locally referred to as (Galamsey)	• Increasing legal and illegal surface mining activities • Increasing demand and encroachment by industrial artisanal and small-scale miners on forest lands • Increasing population in mining areas • Weak enforcement of forest and mining laws • Limited long-term livelihood opportunities in the mining areas.	• Regulate and implement transparent allocation of mining concessions • Halt illegal mining • Intensify on-going reforms to regulate mining activities and increase capacity for enforcement of forest and mining laws • Rehabilitation and vegetation restoration of degraded mined sites after closure of mines • Promote alternative livelihood support systems other than mining.		

		• Fuelwood and charcoal production.	• High rural and urban demand • Open access nature of natural resources • Inefficient production systems • Insufficient supply of alternative sources of energy (e.g. Liquefied Petroleum Gas-LPG)	• Improve supply, distribution and affordability of LPG at both urban and rural areas. • Create enabling environment for the establishment and maintenance of fuel wood plantations • Promote the establishment of community/family woodlots • Improve efficiency in fuelwood use and carbonization methods • Support Agricultural Extension Units of the Ministry of Food and Agriculture (MoFA) and the Forest Service Department (FSD) to create awareness on the need for sustainable supply, production and utilization of woodfuels Collaborate with FSD to enforce regulations on the control of fringe communities in the harvesting and sale of the woodfuel in the forest reserves		

				• Promote collaborative forest management to involve local communities. • Promote and further develop the piloted improved traditional earth kiln method of charcoal production • Promote the use of energyefficient forms of stoves that use less wood and charcoal • Train local artisans to produce the improved stoves.		
		• Wildfires ○ Slash-and-burn agriculture ○ Cattle ranching ○ Hunting	• Fire as a tool for land preparation for farming and hunting • Low capacity to control fire • Uncontrolled use of fire for grassland management for fresh fodder production for livestock	• Increase awareness of impact of bush fires through educational campaigns • Promote the adoption of alternative methods (e.g., zero tillage)to the use of fire for land preparation for farming • Increase capacity and promote networking of communities for prevention		

			• Prevalence of dry vegetation in low rainfall agroecological zones • Celebration of traditional fire festivals in the savanna zone • Weak capacity to implement anti-bush fire law (PNDC Law 229) • Poor recognition of traditional rulers in the implementation and enforcement of the bush fire law.	• and control of fire in their watershed areas. • Pursue strict enforcement of bye laws on bushfires and hunting laws • Intensify the formation and training of community antibushfire committees and squads and strengthen them to discharge their functions. • Equip National Fire Service adequately to play its training role as well as prevention and control of fire outbreaks. • Review PNDC Law 229 to accommodate its deficiencies and improve capacity for its implementation • Recognize and institutionalize the central role of traditional rulers in mobilizing their subjects for bushfires control. • Train communities on the domestication of small mammals (e.g., grasscutters		

				and rabbits) to reduce hunting activities • Promote sustainable rangeland management (e.g., early burning) • Support District Assembles to develop and implement incentive structures to reward communities with success stories of bushfire control.		
		• Overgrazing	• Increasing livestock population • Encroachment on rangelands by influx/ transhumance of large herds of cattle from neighboring countries • Extension livestock rearing and grazing system degrading pastures lands and fodder plants • Lack of capacity for rangeland management • Insufficient involvement of communities in the	• Promote and support community-based rangeland management through reseeding of rangelands with leguminous and pasture seeds • Support communities to develop and manage pasture lands and fodder banks for intensive livestock production • Train and engage manpower in rangeland management to strengthen the extension activities of the FSD and MoFA. • Integrate forage seed cropping into the farming system		

			management of the savanna ecosystems • Weak enforcement of economic Community of West African States (ECOWAS) protocols on transhumance.	• Promote and assist communities in the development of storage systems for fodder, crop residues and agricultural by products to support intensive livestock production • Assist communities in the provision of water management systems (e.g., weirs, hand dug wells, rain water harvesting, etc.) to support livestock watering, household use and dry season gardening and crop production.		
Conversion of forestlands to croplands	158.63	• Food crop farming under slash-and-burn agriculture	• Increasing population, rural poverty and the need to secure livelihoods • Shifting cultivation as a practice for soil regeneration • Limited adoption and use of improved technologies in farming systems	• Facilitate community based land use planning to avoid deforestation and degradation • Promote agricultural intensification practices for increased productivity per hectare • Integrate trees into farming systems for improved soil fertility and additional income	158.63	2030

			• Slash-and-burn farming practices.	• Support applied research aimed at increasing crop yields per hectare • Increase farmer access to finance and risk reduction mechanisms.		
		• Tree crops (cocoa, rubber, oil palm, mango , citrus, coffee, cashew)	• High local and international demand for cash crops • Extensive practices and low yield under poor productive soils • Short-term higher yields of shade crops (e.g., cocoa) under no-shade than shade conditions • Perception that cocoa does not need shade • Selective perverse incentives (e.g., cocoa inputs subsidies/lowering of inputs tariffs)	• Promote intensification rather than extensification of agriculture into forest lands through enhanced productivity and community land use planning • Facilitate community-based land use planning to avoid deforestation ad degradation • Increase farmers awareness on the need for shade trees for shade crops for long-term productivity (e.g., cocoa) • Increase access to information and technical information • Remove financial incentives that encourage forest land conversion • Increase farmers access to finance and risk reduction mechanism		

• Forest showing signs of decline and declining productivity.	2554.06	• Over-exploitation of vegetation, soil and water resources of forest lands	• Population growth and increased demand for wood products • Rural poverty and unsustainable exploitation of forest products and ecosystem resources (soil, water etc) for livelihood support • Poor land clearance and farming methods involving the use of slash-and-burn for crop production in forest lands resulting in erosion, soil fertility decline and poor yields • Degradative surface mining, sand and gravel winning activities in forest lands without vegetative restoration and rehabilitation measures • Weak enforcement of forest laws and regulations	• Rehabilitation and restoration of degraded sites through enrichment planting • Promote establishment and management of community/family woodlots • Promote SLM/SFM to conserve soil and water resources, and to enhance carbon stocks, soil fertility and productivity • Increase capacity for the enforcement of forest and mining laws. • Promote collaborative forest management to actively involve communities • Halt illegal mining • Support community-based land use planning for sustainable watershed management • Facilitate the establishment of alternative non-forest-based livelihood support systems.	2554.06	

			• Insufficient community involvement in sustainable forest management (SFM) • Inadequate alternative non-forest based livelihood support opportunities			
• Shrubs, grasslands, and sparsely vegetated areas having declining productivity and showing early signs of productivity decline.	2255.38	• Depletion of savanna woodlands and grass vegetation, soil erosion and fertility decline.	• Rural poverty and increased population over-exploiting savanna woodland vegetation to secure livelihood through firewood and charcoal production. • Increasing cattle and small ruminant population overgrazing and browsing grassland vegetative resources • Slash-and-burn agriculture resulting in loss of organic matter and nutrients and the requisite cover for erosion control and water conservation.	• Promote alternative livelihood support systems through non-wood forest products (e.g., honey, shea butter, gum Arabic etc) • Create awareness and promote the practice of climate-smart agriculture and SLM/ILM /SFM. • Reform land tenure arrangements to support the adoption and practice of SLM practices • Train communities in the principles and practices of SLM/SFM/ILM • Assist communities to develop and implement land use plans for the sustainable management of rangelands	2255.38	2030

			• Insecure land tenure arrangement leading to the prevalence of nutrient depletive farming practices devoid of replenishment and adoption of SLM • Inadequate land use planning with its associated legal and institutional framework for the practice of SLM/ILM. • Insufficient involvement of community in rangeland management • Climate variability and change adversely impacting rainfall and soil moisture storage for improved productivity • Prevalence of bushfires/inefficient enforcement of bush fire laws.	• Rehabilitate degraded lands through natural regeneration enrichment planting, and upgrading of species diversity and richness • Promote collaborative rangeland management to involve communities • Increase capacity for bush fire prevention and control and enforce bushfire laws.		
• Shrubs, grasslands and sparsely	2338.01	• Relatively less severe depletion of savanna woodland	• Rural poverty and increased population over-exploiting savanna	• Promote alternative livelihood support systems through non-wood forest	2338.01	2030

vegetated areas stable but stressed.		and grass vegetation, soil erosion and fertility decline.	woodland vegetation to secure livelihood through firewood and charcoal production. • Increasing cattle and small ruminant population overgrazing and browsing grassland vegetative resources • Limited slash-and-burn agriculture resulting in loss of organic matter and nutrients and the requisite cover for erosion control and water conservation. • Insecure land tenure arrangement leading to the prevalence of nutrient depletive farming practices devoid of replenishment and adoption of SLM • Inadequate land use planning with its associated legal and institutional framework for the practice of SLM/ILM.	products (e.g., honey, shea butter, gum Arabic etc) • Create awareness and promote the practice of climate-smart agriculture and SLM/ILM SFM. • Reform land tenure arrangements to support the adoption and practice of SLM practices • Train communities the principles and practices of SLM/SFM/ILM • Assist communities to develop and implement land use plans for the sustainable management of rangelands • Rehabilitate degraded lands through natural regeneration enrichment planting, and upgrading of species diversity and richness • Promote collaborative rangeland management to involve communities • Increase capacity for bush fire prevention and control and enforce bushfire laws.		

			• Insufficient involvement of community in rangeland management • Climate variability and change adversely impacting rainfall and soil moisture storage for improved productivity • Prevalence of bushfires/inefficient enforcement of bush fire laws.			
• Cropland having declining productivity and showing early signs of productivity decline.	8535.70	• Depletion of soil organic carbon, nutrients, and soil water, and erosion	• Increasing population, rural poverty and the need to secure livelihoods through overexploitation of croplands • Shifting cultivation as a practice of soil regeneration • Slash-and-burn agriculture depleting organic matter and soil organic carbon (SOC) • Limited use of improved farming methods, SLM, and agronomic/soil	• Develop and implement a robust awareness and training programme on diversified livelihood systems, principles and practices of irrigation, sustainable land and water management (SLM) and integrated landscape management approaches (ILM) to strengthen the capacities of extension agents and district and rural communities • Support diversification of livelihoods of rural communities (crop/livestock integration, fisheries,	8535.70	2030

			management/mechanical methods of soil and water conservation • Insecure land tenure constraining the adoption of SLM and soil and water conservation technologies whilst favouring nutrient depletive rather than replenishment practices • Increasing continuous monocropping vis a vis multiple cropping and crop rotation • Limited access to credit and extension services and use of mineral and organic fertilizers • Lack of incentives for adoption of soil and water conservation technologies/SLM • High farm input and low output prices • Limited crop/livestock farm enterprises	beekeeping, shea butter and groundnut oil processing, etc.) • Promote and assist the development of community based land use plans and implementation of SLWM, soil and water conservation practices and diversified cropping systems • Liaise with District Assemblies and Traditional Authorities to streamline land tenure systems to favour the adoption and implementation of SLWM/ILM approaches • Promote slash-no-burn agriculture (zero tillage, cover crop, vegetative residue recycling, compost manure, etc) • Assist rural communities to establish village savings and loans association (VSLA) for enhanced financial security for farm operations; and to develop and implement market surveillance and intelligence system for		

			• Limited practice of irrigated agriculture	profitable marketing of farm produce • Develop and support the implementation of ecosystem-based incentive structures (e.g., payment for ecosystem services-PES) for the adoption of SLWM practices by rural communities.		
• Croplands stable but stressed	9940.26	• Relatively less severe depletion of soil organic carbon, nutrients and water; and erosion.	• Increasing population, rural poverty and the need to secure livelihoods through overexploitation of croplands • Shifting cultivation as a practice of soil regeneration • Slash-and-burn agriculture depleting organic matter and soil organic carbon (SOC) • Limited use of improved farming methods, SLM, and agronomic/soil management/mechanical methods of soil and water conservation	• Develop and implement a robust awareness and training programme on diversified livelihood systems, principles and practices of irrigation, sustainable land and water management (SLM) and integrated landscape management approaches (ILM) to strengthen the capacities of extension agents and district and rural communities • Support diversification of livelihoods of rural communities (crop/livestock integration, fisheries, beekeeping, shea butter and	9940.26	2030

			• Insecure land tenure constraining the adoption of SLM and soil and water conservation technologies whilst favouring nutrient depletive rather than replenishment practices • Increasing continuous monocropping vis a vis multiple cropping and crop rotation • Limited access to credit and extension services and use of mineral and organic fertilizers • Lack of incentives for adoption of soil and water conservation technologies/SLM • High farm input and low output prices • Limited crop/livestock farm enterprises • Limited practice of irrigated agriculture	groundnut oil processing, etc.) • Promote and assist the development of community based land use plans and implementation of SLWM, soil and water conservation practices and diversified cropping systems • Liaise with District Assemblies and Traditional Authorities to streamline land tenure systems to favour the adoption and implementation of SLWM/ILM approaches • Promote slash-no-burn agriculture (zero tillage, cover crop, vegetative residue recycling, compost manure, etc) • Assist rural communities to establish village savings and loans association (VSLA) for enhanced financial security for farm operations; and to develop and implement market surveillance and intelligence system for		

				profitable marketing of farm produce • Develop and support the implementation of ecosystem-based incentive structures (e.g., payment for ecosystem services-PES) for the adoption of SLWM practices by rural communities.		

Annex 10:

Table 3: Hotspots based on the magnitude of area affected by net productivity decline at the Regional Level.

Region	Area km2	% of additional Regional territory improved.	Forest	grasslands	Cropland
			km2		
Upper East	7614.16	88.29	80.69	2913.60	4619.87
Brong Ahafo	6112.57	15.70	1619.27	1623.56	2869.74
Western Region	4318.17	17.89	1249.96	45.05	3023.17
Ashanti	4298.04	17.34	263.99	177.31	3856.74
Volta	3696.87	17.82	117.90	626.77	2952.20
Northern	3492.10	4.97	1630.99	1247.22	613.89
Eastern	2703.77	14.32	165.00	534.76	2004.01
Greater Accra	2156.98	58.54	29.20	334.56	1793.22
Central	937.88	9.60	20.42	102.53	814.93
Upper West	186.83	1.00	0.00	36.75	613.89