Meeting of the Board
6 – 8 July 2019
Songdo, Incheon, Republic of Korea
Provisional Agenda Item 20

GCF/B.23/02/Add.08

14 June 2019

Consideration of funding proposals – Addendum VIII
Funding proposal package for FP114

Summary

This addendum contains the following six parts:

a) A funding proposal summary titled "Program on Affirmative Finance Action for Women in Africa (AFAWA): Financing Climate Resilient Agricultural Practices in Ghana" submitted by the African Development Bank (AfDB);
b) No-objection letter issued by the national designated authority(ies) or focal point(s);
c) Environmental and social report(s) disclosure;
d) Independent Technical Advisory Panel's assessment;
e) Response from the accredited entity to the independent Technical Advisory Panel's assessment; and
f) Gender documentation of the funding proposal.

These documents are presented as submitted by the accredited entity and the national designated authority(ies) or focal point(s), respectively. Pursuant to the Comprehensive Information Disclosure Policy of the Fund, the funding proposal titled "Program on Affirmative Finance Action for Women in Africa (AFAWA): Financing Climate Resilient Agricultural Practices in Ghana" submitted by the the African Development Bank is being circulated on a limited distribution basis only to Board Members and Alternate Board Members to ensure confidentiality of certain proprietary, legally privileged or commercially sensitive information of the entity.

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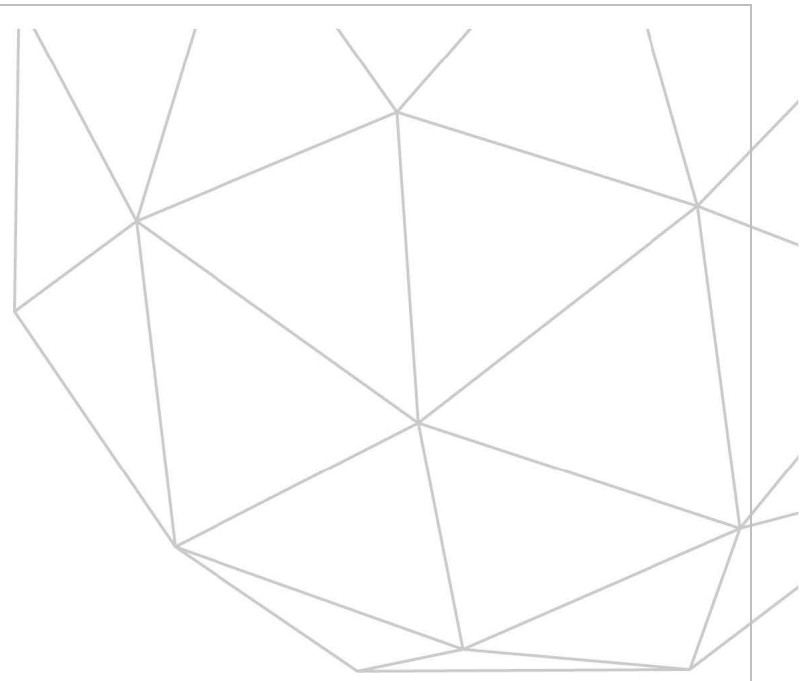


Funding Proposal

Version 1.1

The Green Climate Fund (GCF) is seeking high-quality funding proposals.

Accredited entities are expected to develop their funding proposals, in close consultation with the relevant national designated authority, with due consideration of the GCF's Investment Framework and Results Management Framework. The funding proposals should demonstrate how the proposed projects or programmes will perform against the investment criteria and achieve part or all of the strategic impact results.

Project/Programme Title:	Program on Affirmative Finance Action for Women in Africa (AFAWA): Financing Climate Resilient Agricultural Practices in Ghana
Country/Region:	Ghana/Africa
Accredited Entity:	African Development Bank
Date of Submission:	29 October 2018

GREEN CLIMATE FUND

Contents

Note to accredited entities on the use of the funding proposal template

- Sections **A, B, D, E** and **H** of the funding proposal require detailed inputs from the accredited entity. For all other sections, including the Appraisal Summary in section F, accredited entities have discretion in how they wish to present the information. Accredited entities can either directly incorporate information into this proposal, or provide summary information in the proposal with cross-reference to other project documents such as project appraisal document.
- The total number of pages for the funding proposal (excluding annexes) is expected not to exceed 50.

Please submit the completed form to:

fundingproposal@gcfund.org

Please use the following name convention for the file name:

FP-AfDB-08-06-2018-V.9

A.1. Brief Project/Programme Information			
A.1.1. Project / programme title		**Program on Affirmative Finance Action for Women in Africa (AFAWA): Financing Climate Resilient Agricultural Practices in Ghana**	
A.1.2. Project or programme		programme	
A.1.3. Country (ies) / region		**Ghana/Africa**	
A.1.4. National designated authority (ies)		**Ministry of Finance (MoF)**	
A.1.5. Accredited entity		**African Development Bank (AfDB)**	
A.1.5.a.Access modality		☐ Direct ☒ International	
A.1.6. Executing entity / beneficiary		Executing Entity: Component 1: African Development Bank and local financial institutions in Ghana (LFIs); Component 2: African Development Bank Beneficiary: Component 1: 400 women-led farm-based associations (FBAs) and agribusiness MSMEs practicing low-emission climate resilient agricultural activities Component 2: Local financial institutions and about 400 women-led FBAs and agribusiness MSMEs practicing climate resilient agricultural activities. The total direct and indirect beneficiaries are 373,720.	
A.1.7. Project size category (Total investment, million USD)		☐ Micro (≤10) ☐ Medium (50<x≤250)	X Small (10<x≤50) ☐ Large (>250)
A.1.8. Mitigation / adaptation focus		☐ Mitigation ☐ Adaptation ☒ Cross-cutting	
A.1.9. Date of submission		29 October 2018	
A.1.10. Project contact details	Contact person, position	Timothy Afful-Koomson, Chief Climate Finance Officer. Woldegeorgise, Ezana Haile, Principal Investment Officer.	
	Organization	African Development Bank	
	Email address	T.AFFUL-KOOMSON@afdb.org; E.WOLDEGEORGISE@AFDB.ORG	
	Telephone number	+225 20 26 4622; +225 20 55 7726	
	Mailing address	African Development AfDB Head-quarters Avenue Joseph Anoma 01 Boite Postale 1387 ABIDJAN 01 COTE D'IVOIRE	

A.1.11. Results areas *(mark all that apply)*

Reduced emissions from:

☒ Energy access and power generation
(E.g. on-grid, micro-grid or off-grid solar, wind, geothermal, etc.)

☐ Low emission transport
(E.g. high-speed rail, rapid bus system, etc.)

☐ Buildings, cities and industries and appliances
(E.g. new and retrofitted energy-efficient buildings, energy-efficient equipment for companies and supply chain management, etc.)

☒ Forestry and land use
(E.g. forest conservation and management, agroforestry, agricultural irrigation, water treatment and management, etc.)

Increased resilience of:

☒ Most vulnerable people and communities
(E.g. mitigation of operational risk associated with climate change – diversification of supply sources and supply chain management, relocation of manufacturing facilities and warehouses, etc.)

☒ Health and well-being, and food and water security
(E.g. climate-resilient crops, efficient irrigation systems, etc.)

☐ Infrastructure and built environment
(E.g. sea walls, resilient road networks, etc.)

☒ Ecosystem and ecosystem services
(E.g. ecosystem conservation and management, ecotourism, etc.)

A.2. Project / Programme Executive Summary (max 300 words)

Please provide a brief description of the proposed project/programme, including the objectives and primary measurable benefits (see investment criteria in section E). The detailed description can be elaborated in section C.

Economic growth in Ghana is highly dependent on the agricultural sector - contributing about 30% of GDP and 60% of employment. The contribution of the agricultural sector to employment is over 90% in rural areas mainly by subsistence farmers with approximately 90% of farm holdings of less than 2 hectares.

Ghana's agriculture sector is the third largest emitter of carbon, accounting for 15% of the total emissions. It is also highly vulnerable to climate change impacts, as historical data for Ghana from the year 1961 to 2000 clearly shows: a progressive rise in temperature and decrease in mean annual rainfall in all the six agro-ecological zones of the country. Ghana's National Climate Change Adaptation Strategy indicates that climate change is manifested in Ghana through: (i) rising temperatures, (ii) declining total rainfall and increased variability, (iii) rising sea levels and (iv) high incidence of weather extremes and disasters. Emission baseline scenario and climate vulnerability are analyzed in more detail in section C.2.

The Sudano-Guinea Savannah (Savannah) agro-ecological zone where this programme is largely focusing is one of the ecological zones with the highest deforestation and emissions in Ghana. This is due to the high dependence on biomass-based energy sources for cooking and agro-processing. This could undermine Ghana efforts at reducing deforestation and improving carbon sequestration from forest and land use to help meet its Nationally Determined Contributions target. The area is also the most vulnerable agro-ecological zone to climate variability in Ghana with average annual rainfall of 958 mm from 1976-2010. The climate variability is one of the major reasons for the high variability in agricultural yield in the area.

The programme's objective is to empower those vulnerable women groups in this most vulnerable agro-ecological zone through Line of Credit (LoC) and through Technical Assistance (TA) to participate in low-emission climate resilient agricultural (CRA) practices in Ghana.

The programme will provide, in Component 1, affordable loans to micro, small, medium-sized enterprises (MSMEs) and farmer based associations (FBAs) led by women who will adopt low-emissions and climate resilient agricultural practices in Ghana and, in component 2, technical assistance for adoption of low-emission and climate resilient

practices for MSMEs and a local bank, enhancement of regulatory framework, and knowledge dissemination.

AfDB is requesting US$18.5 million loan and US$1.5 million grants from the GCF in order to partner local financial institutions (LFIs). LFIs selected by AfDB[1] will provide US$ 5 million loan. The programme is expected to benefit 400 women-led MSMEs and FBAs and a total beneficiaries of 373,720. The programme will also contribute to emission reductions by replacing diesel, fuelwood and charcoal with renewable sources (with solar power and biogas to electricity) and sustainable use (from resilient agriculture interventions). The total emission reduction is forecasted to reach 1,939,426 tons of CO_2 in 15 years of the LoC tenor and, 3,232,377tons of CO_2 in 25 years (or the lifetime of). This is not taking into consideration the avoided emissions from the use of biomass based energy (such as woodfuel and charcoal) as result of the switch to renewable energy.

A.3. Project/Programme Milestone	
Expected approval from accredited entity's Board (if applicable)	October 2019
Expected financial close (if applicable)	4th quarter 2019
Estimated implementation start and end date	4th quarter 2019 to 3rd quarter of 2024
Project/programme lifespan	5 years

[1]Among the LFIs under AfDB's consideration for selection, Ecobank Ghana has signed and submitted a Letter of Intent and being considered as a target bank. AfDB will finalize the selection of the LFIs before the execution of the FAA. The selection criteria for LFIs are provided in section C.4.

B.1. Description of Financial Elements of the Project / Programme

A breakdown of cost estimates for total project costs and GCF financing by sub-component in local and foreign currency and a currency hedging mechanism:

The programme is seeking US$ 18.5 million loan and US$1.5 million grant from the GCF.As shown in Table B.1, the GCF loan proceeds will be used for LFIs to on lend to the women-led MSMEs and FBAs involved in low-emission and climate resilient agricultural practices. LFIs' sub-loans will be provided in Ghanaian Cedis below market rate and with a longer tenor to enhance access to credit.

Table B.1: Breakdown of GCF Financing by programme components

Programme Component	GCF Financing	Amount in Million (US$)	% of Total Budget
Line of Credit (LoC)	Senior Loan	$18.50	92.50%
Technical Assistance (TA)	Grant	$1.50	7.50%
Grand Total		**$20.00**	**100.00%**

Table B.2 below provides a detailed breakdown of the cost estimates for total project costs and GCF financing by sub-component in USD and local currency.

Table B.2: Breakdown by sub-component, including total costs and GCF financing

Components	Sub-components	Total amount (million US$)	GCF (million US$)	Local banks (million US$)	AfDB (million US$)
Component 1: Line of Credit (LoC)	Sub-component 1.1 LOC	23.5	18.50	5[2]	0
Component 2: Technical Assistance (TA) for Development of Climate Resilience Agricultural Value Chain	Sub-component 2.1: Capacity building for CRA adoption practices and technologies uptake	0.15	0.15	0	0
	Sub-component 2.2: Technical Assistance for LFIs GH and MSMEs/FBAs to support implementation of programme	1.05	1.05	0	0
	Sub-component 2.3: Technical Assistance for strengthening the regulatory framework for private sector investment in climate resilient Agriculture	0.15	0.15	0	0
	Sub-component 2.4: Advocacy, knowledge Management and Outputs Dissemination	0.15	0.15	0	0
Component 3: Programme Management	Sub-component 3.1: Programme Management	0.60	0.00	0	0.6
Total Programme Financing		**25.60**	**20.00**	**5**	**0.6**

The budget breakdown for the GCF funding is shown in Table B.3.

[2] The target co-financing from selected local banks is USD 5million-equivalent local currency loan.

Table B.3: GCF Expenditure by Cost Components

Expenditure Component	Amount in Million USD	% of GCF Budget
Credit Allocations	$18,500,000.00	92.50%
Staff Cost	$900,000.00	4.50%
Training, workshops, and conference	$562,500.00	2.80%
Local consultants	$31,875.00	0.20%
Travel	$5,625.00	0.03%
Total	**$20,000,000.00**	**100.00%**

AfDB and LFIs will sign a loan agreement in USD for USD 18.5 million. LFIs will enter into an appropriate hedging agreement to advance loans in GHS. Repayment from LFIs to GCF through AfDB will be made in USD.

B.2. Project Financing Information

	Financial Instrument	Amount	Currency	Tenor	Pricing
(a) Total project financing	**(a) = (b) + (c)**	**25.6**			
(b) GCF financingto recipient	(i) Senior Loans (ii) Subordinated Loans (iii) Equity (iv) Guarantees (v) Reimbursable grants* (vi) Grants *	**18.5** **1.5**			
	** Please provide economic and financial justification in section F.1 for the concessionality that GCF is expected to provide, particularly in the case of grants. Please specify difference in tenor and price between GCF financing and that of accredited entities. Please note that the level of concessionality should correspond to the level of the project/programme's expected performance against the investment criteria indicated in section E.*				
	Total requested (i+ii+iii+iv+v+vi)	**20**	million USD ($)		

	Financial Instrument	Amount	Currency	Name of Institution	Tenor	Pricing	Seniority
(c) Co-financing to recipient	Senior Loans	5	million USD ($)	LFIs			pari passu
	Options						
	Options		million USD ($)				Options
	Options		Options				
	In-kind (TA and advisory services from staff)	0.60	million USD ($)	AfDB			Options

** Please provide a confirmation letter or a letter of commitment in section I issued by the co-financing institution.*

The African Development Bank has committed over US$ 14.1 million and the Government of Ghana provided over US$ 49 million to capitalize GIRSAL which this program seeks to complement. Since the AfDB has already provided funding for the risk-sharing facility, it will not be appropriate to also provide senior debt for on-lending through LFIs GH with this programme. There will be a critical moral hazard for AfDB to have investment exposure at the risk-sharing facility with GIRSAL and at the credit facility with this programme.

(d) Financial

In cases where the accredited entity (AE) deploys the GCF financing directly to the recipient, (i.e. the GCF

terms between GCF and AE (if applicable)	*financing passes directly from the GCF to the recipient through the AE)or if the AE is the recipient itself, in the proposed financial instrument and terms as described in part (b), this subsection can be skipped. Ifthere is a financial arrangement between the GCF and the AE, whichentails a financial instrument and/or financial terms separate from the ones described in part (b), please fill out the table below to specify the proposed instrument and terms between the GCF and the AE.*

B.3. Financial Markets Overview (if applicable)

How market price or expected commercial rate return was (non-concessional) determined?Please provide an overview of the size of total banking assets, debt capital markets and equity capital marketswhich could be tapped to finance the proposed project/programme. Provide examples or information on comparable transactions.

The banking sector in Ghana is the second largest in the West African Monetary Zone. Until late 1990s where several banks were privatized, the banking sector was dominated by state owned banks. Table B.3.1 shows the assets and liability structure of the banking sector. The total assets size of the banking sector was GH¢107.34 billion (about US$ 20 billion) at end-December 2018, registering an annual growth of 14.7 percent, compared with 13.3 percent growth at end-December 2017. Cash due from banks and investments constitute the largest percentage (over 60%) of the assets. The assets growth was funded mainly by deposits and shareholders' funds. Total deposits went up by 17.3 percent on-year-on-year basis to GH¢68.29 billion (about US$ 5.4 billion) as at end-December 2018, compared with 10.5 percent growth a year earlier. There was about 12 percent decline in borrowing in December 2018 compared with a growth of 23.2 percent in December 2017, reflecting banks' less reliance on borrowings as a result of increased deposit mobilization and equity injection. Investments remained the major component of total assets of the banking sector, followed by net advances and then cash and due from banks (BOG, 2019[3]).

Table B.3.1. Assets and Liability Structure of the Banking Sector in Ghana.

	Dec-15	Dec-16	Dec-17	Oct-18	Dec-18
Components of Assets (% of Total)					
Cash and Due from Banks	26.4	27.0	26.0	23.7	27.6
Investments	22.6	27.7	30.5	40.3	35.6
Net Advances	42.7	37.7	33.6	28.7	29.6
Other Assets	4.8	3.9	5.3	3.6	3.4
Fixed Assets	3.4	3.6	4.4	3.6	3.8
Components of Liabilities & Shareholders Funds(% of Total)					
Total Deposits	65.1	63.8	62.2	63.4	63.6
Total Borrowings	15.0	16.6	18.1	17.0	13.8
Other Liabilities	5.4	6.2	6.6	6.6	6.8
Shareholders' Funds	14.5	13.3	13.1	13.1	15.8

Source: BOG (2019).

The exposure of the banking industry to credit risk slowed in December 2018 relative to 2017. Real credit growth (excluding loans under receivership) also declined in December 2018 compared with 2017. Growth in private sector credit (excluding the loans under receivership) declined by 11.7 percent in December 2018, after recording a modest growth of 2.3 percent in December 2017. Household credit constituted 22.9 percent of the stock of total credit outstanding as at end-December2018, while credit to private enterprises accounted for 66.3 percent.

Despite the dissolution of the 5 local banks (Beige Bank, uniBank, Sovereign Bank, Construction Bank and Royal Bank) and the merger of their operations into the newly established Consolidated Bank Ghana (CBG) due to concerns over their profiles, banking industry is still adequately liquid to meet its short-term obligations, with core and broad liquidity

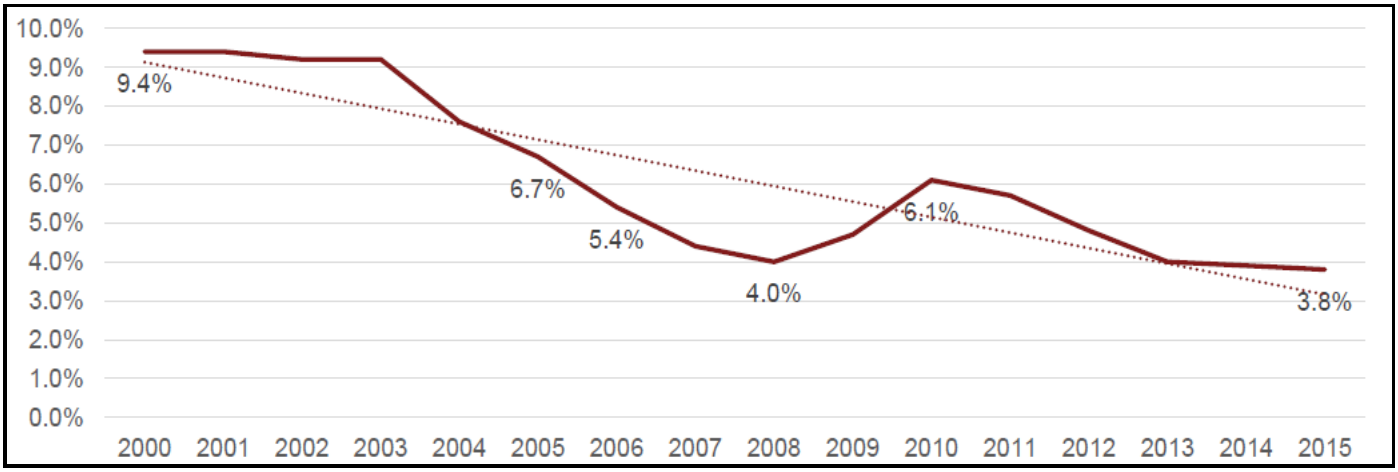
[3]Bank of Ghana, (2019). Banking Sector Report, January 2019.
https://www.bog.gov.gh/privatecontent/MPC_Press_Releases/Banking%20Sector%20Report%20-%20January%202019.pdf

indicators showing some improvements as at end-December 2018 compared to the same period in 2017.The solvency of the industry represented by the main indicator of the Capital Adequacy Ratio (CAR) was well above the statutory requirement of 10.0 percent in December 2018. This was due partly to the recent recapitalization exercise which contributed to the increase in the industry CAR from 18.5 percent in December 2017 to 21.9percent in December 2018, while the Tier 1 CAR (another solvency measure) went up from 15.4 percent to 21.0 percent over the same period. The improved solvency will enhance the capacity of banks to expand credit growth as well as absorb any potential losses (BOG, 2019).This liquidity and capital adequacy concerns is one of the reasons this funding proposal is focusing on tier 1 bank such as LFIs.

As indicated in Figure B.3.1, the high monetary policy rate, inflation and lack of effective regulation in Ghana has led to some banks and microfinance institutions charging between 35% and 40% on short term loans. The dysfunctional financial intermediation system where government treasury securities with high rates competes with the private sector for the limited capital available have led to commercial banks preference for government securities at the peril of the private sector. Moreover, due to dependence on short-term deposits for lending, BASEL III regulatory constraints on medium to long term lending and the short-term nature of these government securities commercial banks prefer these to lending to the private sector for medium to long term investment projects that causes mismatch with their short-term deposit. This programme seeks to provide financing with relatively longer repayment tenors to enable women-led MSMEs and FBAs fund medium- to long-term low-emission and climate resilient agricultural investments.

Apart from the dysfunctional financial intermediation system and the challenge of commercial banks providing medium to long-term credit, the agricultural sector is relatively not attractive to financial institutions due to the perceived high risks and uncertainties associated with the sector. As shown in Figure B.3.2, over a period of 15 years, bank lending to the agriculture sector has been on the general decline, dropping from over 9% of total bank credit to below 4%. This is in spite of the various agri-financing mechanisms implemented. (PWC, 2017[4]). The financing of agriculture by commercial banks in the country is largely dominated by a few ones, indicating the low risk appetite that commercial banks, generally, have for the sector.

Figure B.3.1: Agriculture as a percentage of commercial bank lending in Ghana.



Source: (PWC, 2017)

Besides, all these challenges of lack of capital, dysfunctional financial intermediation, unattractiveness of the agricultural sector to financial institutions, women face additional challenge of not having equal access to the limited finance available. The market scoping study conducted for the AFAWA initiative indicates that access to finance is one

[4] PWC. (2017). Bank of Ghana: Design and set-up of GIRSAL - Revised status report. Accra: PricewaterhouseCoopers Ghana.

of the major constraints for women entrepreneurs. Access to finance is not gender neutral, with men having better access to finance than women. Women account for only 20% of the banked population as compared to 27% for men in the region. Nonfinancial barriers often restrain women from accessing financial services. These include: (i) the broader business and legal environment that may differentially affect women and men in businesses; (ii) personal characteristics of the entrepreneurs (such as differences in educational attainment and skills); (iii) characteristics of the firm (size, area of specialization, location, formal/informal sector); and (iv) constraints within financial institutions (little familiarity with women entrepreneurs). (A2F, 2016[5])

[5]A2F. (2016). Market scoping study to inform the development of the AfDB's 'Affirmative Finance Action for Women in Africa' program ('AFAWA'). Bethesda: A2F Consulting.

C.1. Strategic Context

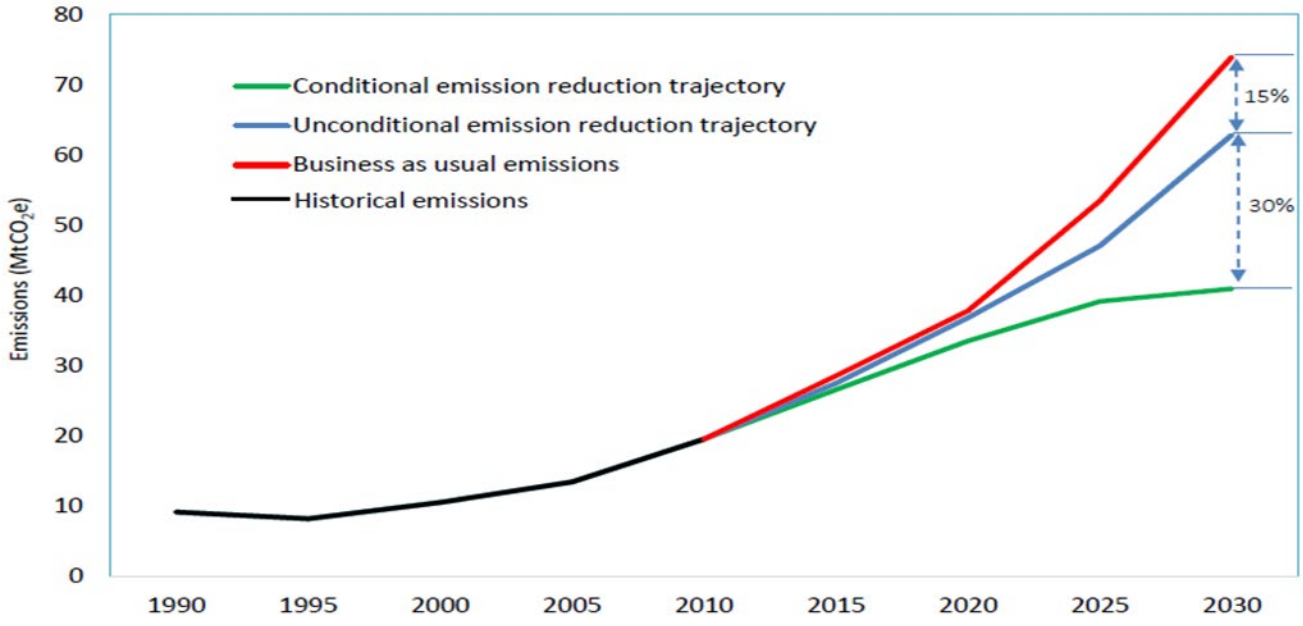
Please describe relevant national, sub-national, regional, global, political, and/or economic factors that help to contextualize the proposal, including existing national and sector policies and strategies.

C.1.1. Climate Change Policies and Strategies.

Ghana is committed to measures to reduce vulnerability of climate risks to human lives, ecosystems, production systems and assets as well as measures to ensure growth that is decoupled from high carbon emissions. This commitment is demonstrated in for example, the pursuit of the National Climate Adaption Policy [6] and implementation of activities highlighted in the National Climate Change Communication[7] to the United Nations Framework Convention on Climate Change (UNFCCC). Ghana has also formulated an Action Program for the implementation of the National Master Plan against Climate Change for the five-year period 2015-2020, which is based on agriculture, infrastructure, communities, carbon sinks, ecosystems, health, water, gender, migration and energy to promote sustainable development.

Ghana submitted its first Nationally Determined Contributions (NDC) to the UNFCCC in September 2016. The NDC is embed on (i) Ghana's National Climate Change Master Plan (2015-2020), (ii) its national medium-term development plans (Ghana Shared Growth Development Agenda II -GSGDA2), (iii) the anticipated 40-year socio-economic transformational plan and (iv) the Sustainable Development Goals (SDGs).

Figure C.1.1. Emission Trajectory of Ghana.



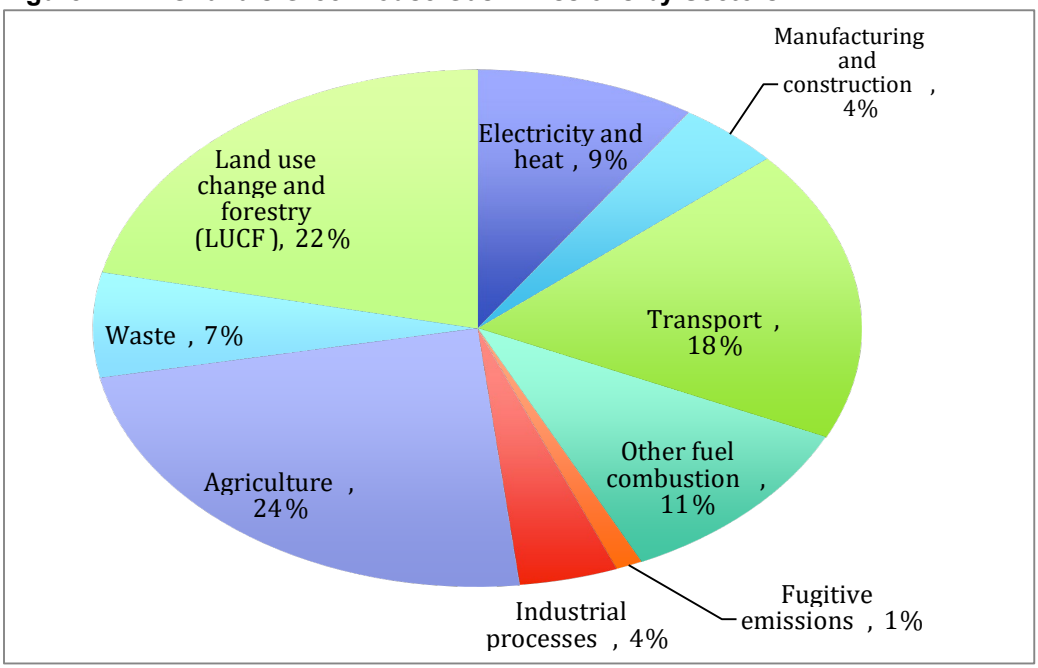
Source: Ghana NDC 2015.

As indicated in Figure C.1.1 through the NDC implementation, Ghana envisages to unconditionally lower its GHG emissions by 15 percent relative to a business-as-usual (BAU) scenario emission of 73.95 MtCO2 by 2030. Equally, an additional 30 percent emission reduction is expected on condition that external support is made

[6] Ghana Climate Change Adaptation Strategy: https://www.adaptation-undp.org/sites/default/files/downloads/ghana_national_climate_change_adaptation_strategy_nccas.pdf
[7] Third Communication to the UNFCCC: https://unfccc.int/resource/docs/natc/ghanc3.pdf

available to Ghana to fund the incremental costs of those intended measures that would require over USD 22 billion in investments from domestic and international public and private sources to finance these actions. About USD 6 billion is expected to be mobilized from domestic sources (unconditional contribution) and USD 16.3 billion will need to come from international support (conditional contribution). Out of the USD 22.6 billion investment, USD 9.81 billion (representing 45 % of the total investment) is needed for mitigation whereas the remaining USD 12.79 billion will be required for adaptation.

Figure C.1.2. Ghana's Greenhouse Gas Emissions by Sectors.



Source: Ghana Third Communication to the UNFCCC (2015)

C.1.2. GHG Emissions Contribution of the Agriculture Sector in Ghana.

Ghana ranks 151 of 188 countries for per capital emissions, contributing only 0.07% of global emissions. However, the country with attaining middle-income country status and still pursuing increasing growth and socio-economic development could see a significant increase in GHG emissions in the near future. The agricultural sector for example currently contributes about 24% of GHG emissions which is expected to increase drastically if measures are not put in place to reduce the carbon footprints of activities in the agricultural value chain. Agriculture is pivotal to economic growth in Ghana. On average, Ghana's agriculture has grown at a rate of more than 5% within the past 25 years which makes a compelling case that if measures are not put in place at least there will be over 5% growth in GHG emissions from the agricultural sector.

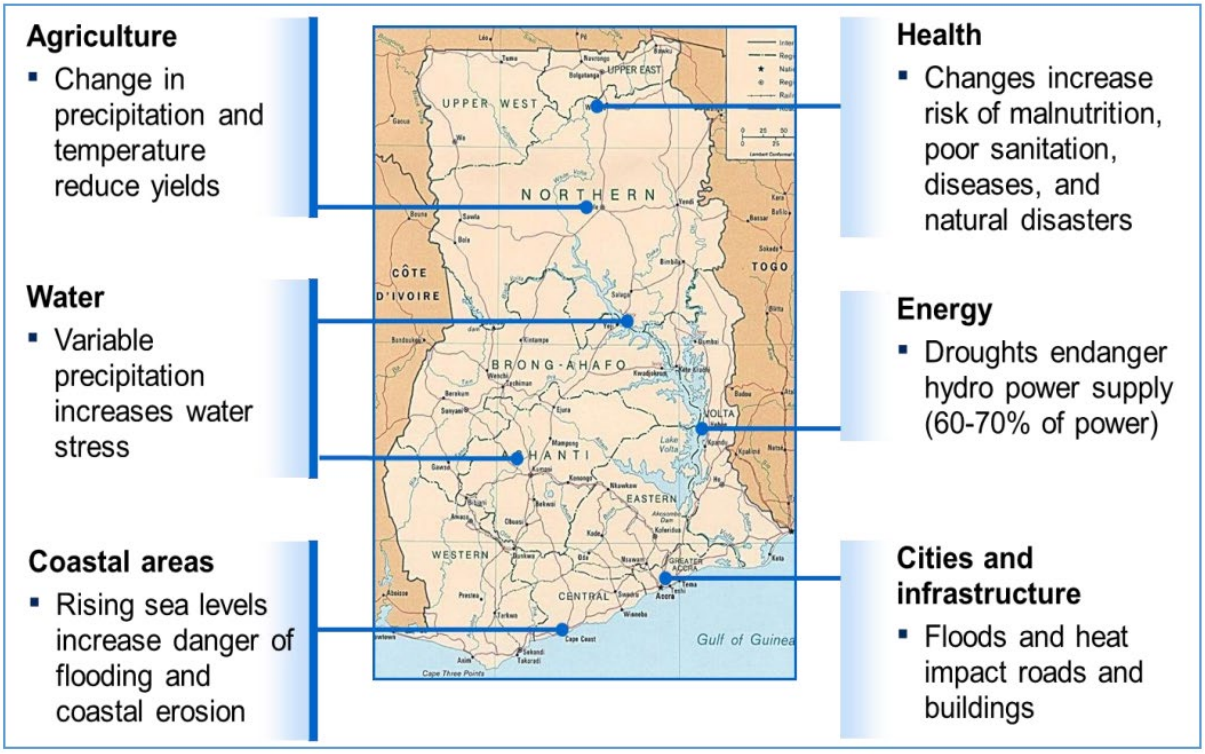
The AFAWA funding proposal will contribute to 5 of the 7 priority areas of the NDC. These are 1. sustainable land use, including food security; 2. equitable social development; 5. sustainable energy security; 6. sustainable forest management; and 7. alternative urban waste management (biogas from human and agro-waste). The programme is intended to help Ghana pursue its NDC targets for both mitigation and adaptation. Agriculture, forestry and other landuse contributes to carbon emission in Ghana. As shown in Figure C.1.2, the sectors relevant for the AFAWA funding proposal contributes over 50% of GHG emissions in Ghana.

C.1.3. Climate Change Vulnerabilities of the Agriculture Sector in Ghana.

As noted above over90% of rural population depends directly on agriculture activities in farming, fisheries, livestock

and the value chain. Not only is the agricultural sector highly vulnerable to climate risks, the rural population that depends on rain-fed agriculture also have very low adaptation capacity and resources to help them bounce back after any climate risk such as drought. It has been estimated that due toclimate change, the maize and other cereal crop yields are likely to decline by 7% by 2050. This could be devastating to rural population such as are predominantly in the agro-ecological zone the programme is focusing on.

Figure C.1.2. Geographical Impacts of Major Climate Change Vulnerabilities



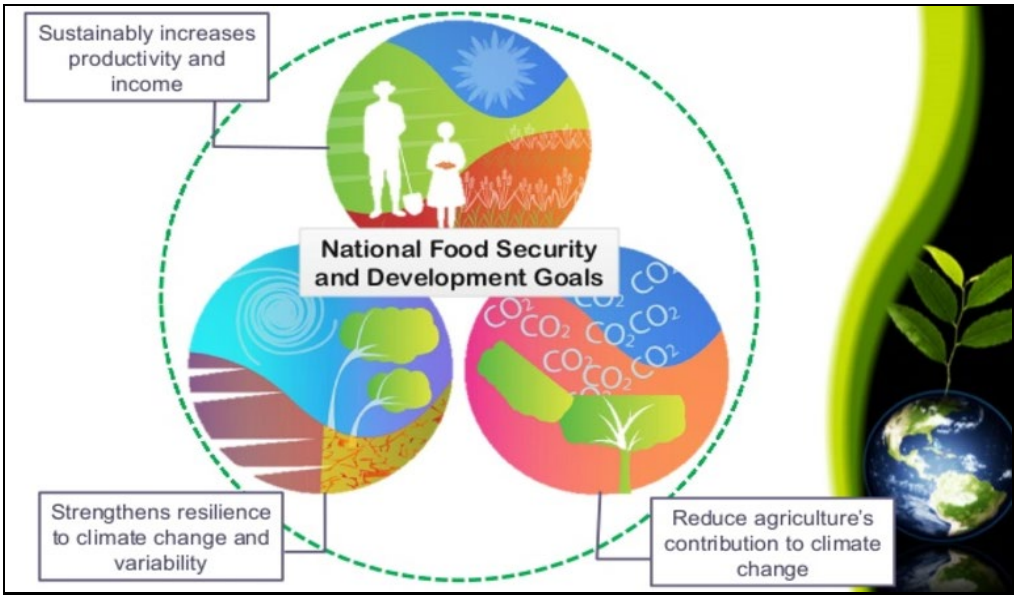
Source: Ghana Third Communication to the UNFCCC (2015)

As shown in Figure C.1.2, the agro-ecological zone of focus for this funding proposal has the highest vulnerability to variability in rainfall and temperature and their impacts on agricultural yield.

C.I.4. Strategic Measures for Addressing Climate Vulnerability and Low Emissions from the Agricultural Sector.

All the National Development strategies and policies in Ghana highlight the need for the country to “climate proof” the agriculture sector. Proposed solutions center on technologies to improve the robustness of the sector in the face of climate change, such as drought tolerant crop varieties and a transformation from rainfall to irrigated agriculture, as well as reducing deforestation through agricultural expansion and soil carbon storage. The idea is that, through these strategies, the agricultural sector can contribute to three goals simultaneously, namely to reduce emissions, reduce vulnerability through adaptation, and promote economic growth and development. (See Figure C.1.3)

Figure C.1.3. CSA Ecosystem (adapted from CSAguide.com)



The AFAWA funding proposal is predicated on the strategic framework presented in Figure C.1.3. The programme will implement climate-resilient measures such as the use of drought resistant seed to address the high vulnerability of agriculture in the Savannah agro-ecological zones to climate risks. It will replace technologies such as diesel based tractors and the use of firewood and charcoal for agro-processing with low carbon technologies such as off-grid solar and biogas. It will also improve value addition, diversification, productivity and profitability for economic growth and development by funding the acquisition of for example, storage and processing facilities.

C.2. Project / Programme Objective against Baseline

Describe the baseline scenario (i.e. emissions baseline, climate vulnerability baseline, key barriers, challenges and/or policies) and the outcomes and the impact that the project/programme will aim to achieve in improving the baseline scenario.

C.2.1. GHG Emission baseline of the Savannah Agro-ecological zones

The country's vulnerability to climate change shows marked disparities across the six different agro-ecological zones. That is, the Sudan Savannah Zone, Guinea Savannah Zone, Transition Zone, Semi-deciduous Forest zone, Rain Forest Zone and the Coastal Savannah Zone. These zones can easily be differentiated in terms of rainfall patterns, portion of total land area occupied, the length of growing season, the dominant land use systems and main food crops produced as shown in Table C.2.1.

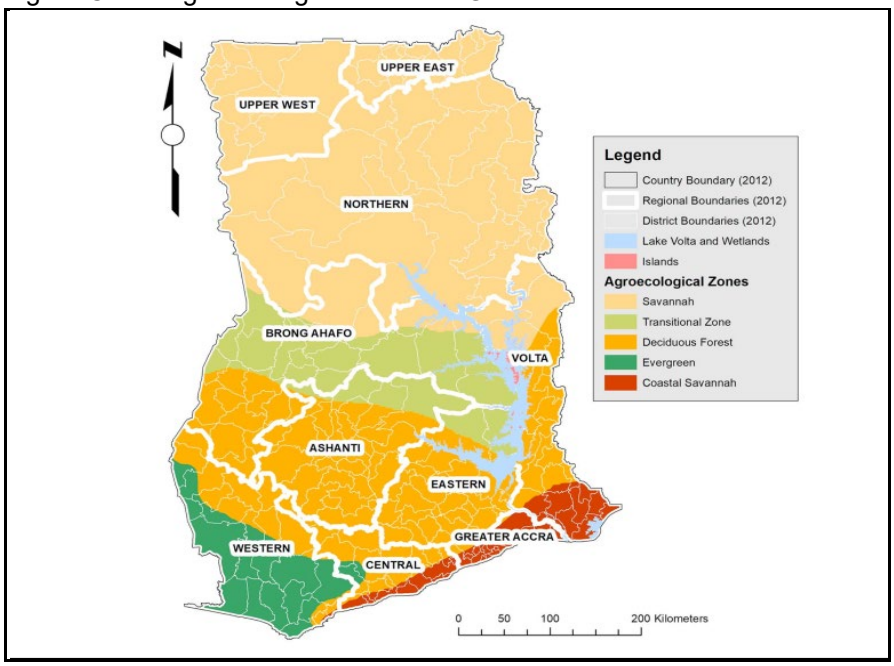
Table C.2.1: General characteristics of Ghana's Agro-ecological Zones (AEZs)

AEZ	Rainfall Patterns (Mm/year)	Total land Area (%)	Length of Growing Season (Days)	Dominant Land Use Systems	Main Crops Produced
Rain forest	2,220	3%	Major season: 150-160 Minor season: 100	Forest, Plantations	Roots, Plantain
Deciduous forest	1,500	3%	Major season: 150-160	Forest, Plantations	Roots, Plantain
Transition zone	1,300	28%	Minor season: 90	Annual Food and Cash Crops	Maize, Roots,
Guinea Savannah	1,100	63%	180-200	Annual Food and Cash Crops, Livestock	Sorghum, Maize
Sudan Savannah	958	1%	150-160	Annual Food Crops, Livestock	Millet, Sorghum, Cowpea
Coastal Savannah	800	2%	Major season: 100-110 Minor season: 50	Annual Food Crops	Roots, Maize

Source: Adopted from FAO AQUASTAT 2015

As shown in Figure C.2.1, the Savannah agro-ecological zones constitute over 60% of the country geographical size.

Figure C.2.1. Agro-ecological zones of Ghana.



Source: Abbam et. Al (2018)[8].

The Savannah ecozone where the programme is largely focusing is one of the ecozones in Ghana with high deforestation of about 1.8% change in area of deforestation (hectare) every year. The ecozone which is primarily of grassland vegetation contributes over 4 million tCO_2eq every year[9]. One of the reasons for this high deforestation is absolute dependence on biomass-based energy sources such as charcoal and firewood for household cooking. As shown in Table C.2.2

Table C.2.2. Household Sources of Cooking Fuel (%) in the AFAWA target Area.

[8]Abbam, T., Johnson, F. A., Dash, J., &Padmadas, S. S. (2018). Spatiotemporal variations in rainfall and temperature in Ghana over the twentieth century, 1900–2014. Earth and Space Science, 5, 120–132. https://doi.org/10.1002/2017EA000327

[9]Indufor and Forest Consult. 2015. Development of Reference Emissions Levels and Measurement, Reporting and Verification System in Ghana FC/FCPF/MRV/REL/RFP/01/2013. https://www.forestcarbonpartnership.org/sites/fcp/files/2015/April/Ghana%20MRV%20Final%20Report%20%28ID%2067024%29.pdf

	Electricity	Fossil Based (LPG, diesel, Kerosene)	Biomass Based (Firewood, charcoal, agric residues)
Northern	0.1	1.5	98.4
Upper East	0.4	1.2	98.4
Upper West	0	1.3	98.7
Ghana	0.3	9.2	90.5

Source: Arthur et al 2011[10].

Most of the women-led MSMEs- especially the micro and small-scale agribusinesses rely largely on biomass-based sources of energy for processing as demonstrated in Figure C.2.2.

Figure C.2.2. Processing of shea products with firewood in the Northern Region of Ghana.

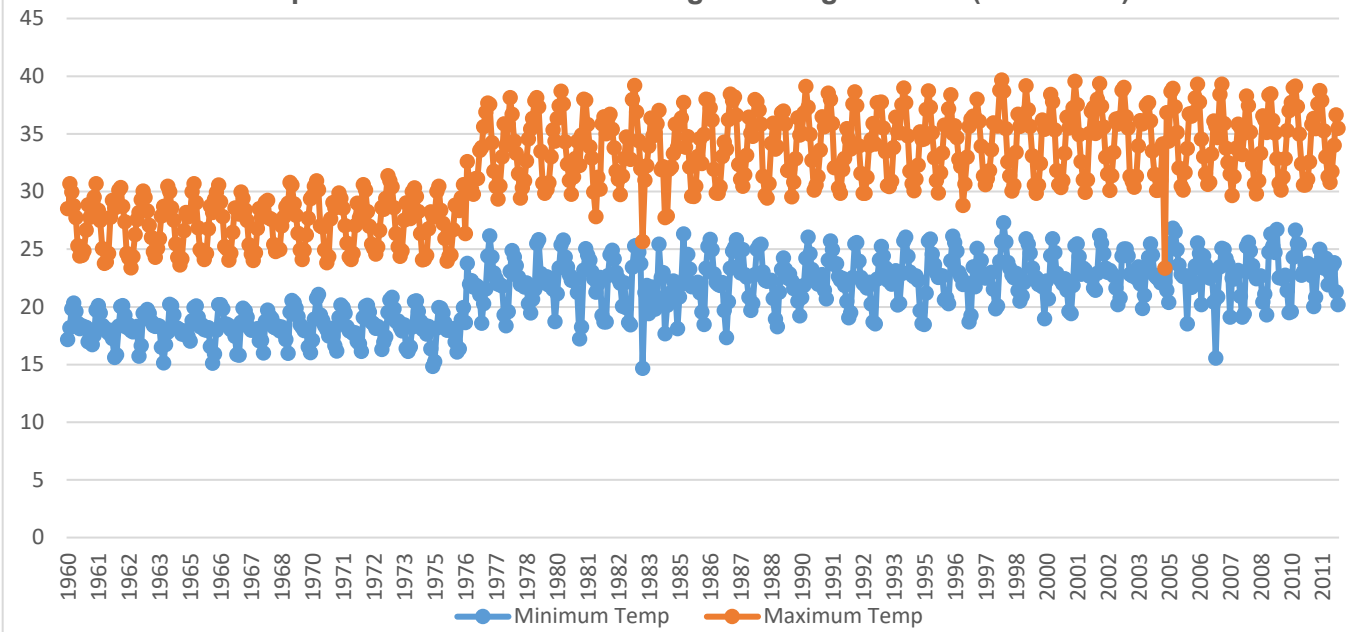
C.2.2. Climate vulnerability baseline (Historical) of the Savannah Agro-ecological Zones.

The Savannah agro-ecological zones are also the most vulnerable ecological zones to climate risks not only in the high variability of climate conditions but also in the relatively high incidence of poverty that undermines the resilience capacity of the population to climate risks.

[10]Arthur, R., et al (2011). Biogas as a potential renewable energy source: A Ghanaian case study. Renewable Energy 36(5):1510-1516. https://www.researchgate.net/publication/222672142_Biogas_as_a_potential_renewable_energy_source_A_ Ghanaian _case study.

C.2.2.1. Historical Variations in the Mean, Minimum, and Maximum Temperatures

Figure C.2.3. Variations in the Mean, Monthly Minimum, and Maximum Temperatures in the Savannah Agro-ecological zone (1960-2011).



Source: Ghana Meteorological Agency.

As evident from Figure C.2.3 there is marked upward trends in both mean monthly minimum and maximum temperature from 1977 in the Savannah agro-ecological zone. A study by Amikuzuno and Donkoh, (2012) indicates that this rising mean temperatures are associated with increasing evapotranspiration and drought especially during the dry season.

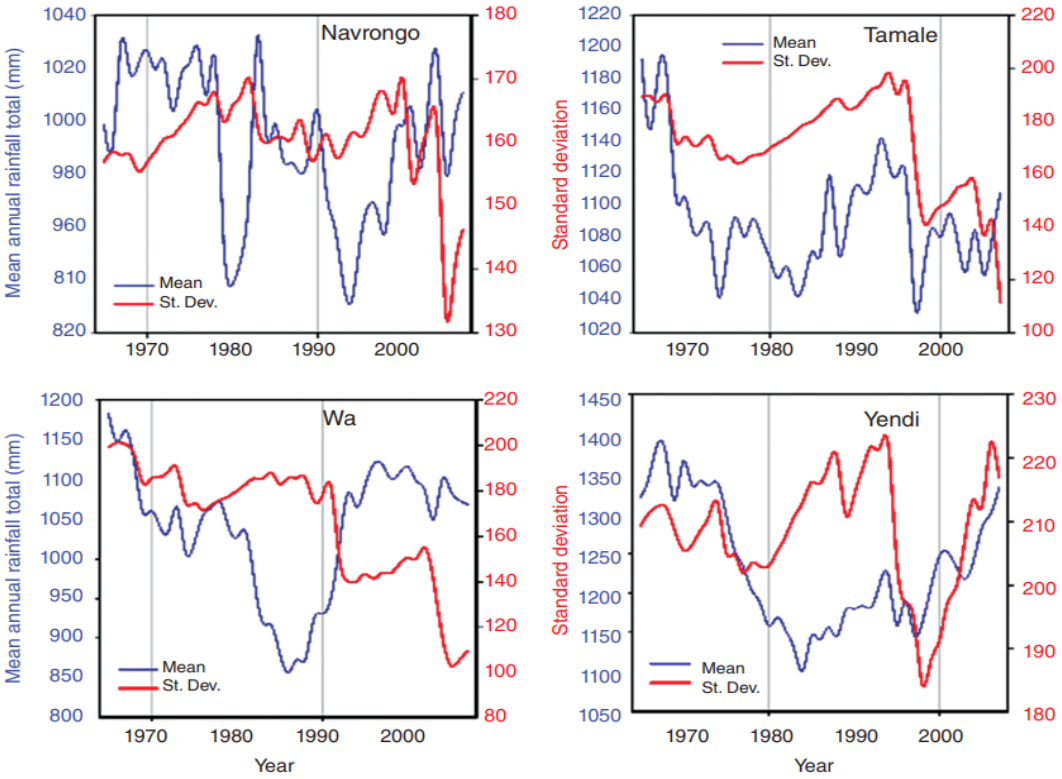
C.2.2.2. Historical Variations in Mean Rainfall and Rainfall Variability

This Savannah zone is characterized by an average annual rainfall of about 958 mm (1976-2010) with a major growing season of about 180 -200 days. Results of analysis by Owusu (2018[11]) based on rainfall data from sample

[11]Owusu, K. 2018. Rainfall changes in the savannah zone of northern Ghana 1961–2010. Weather, February 2018. Vol. 73, No.2. Royal Meteorological Society.

weather stations in the Savannah zone reveal significant variations in rainfall and declining mean rainfall in areas such as Tamale and Yendi as shown in Figure C.2.4.

Figure C.2.4. Variations in Mean Monthly Rainfall from Sample Weather Stations in the Savannah Zones.



Source: Owusu (2018).

The Savannah agro-ecological zone is also one of the major agricultural zones of the country with the dominant land use system comprising of annual food and cash crops including livestock production. The high rainfall variability poses significant climate risks and variability of agricultural production and food security. Studies by Amikuzuno and Donkoh, (2012) indicate that the changes in the agriculturally-relevant variables of climate such as increasing temperatures as shown in Section C.2.2,1 declining levels of mean rainfall and high rainfall variability as shown in Section C.2.2.2 are associated with declining yield and variability in production of maize, rice, wheat and other food crops in the Savannah agro-ecological zone.

C.2.3. Expected Climate Variability of the Savannah Agro-ecological Zones during the Implementation and Duration of the Programme.

• Rising temperature trends in Ghana

As observed in Table C.2.3, for the six-agro ecological zones, average annual temperatures are expected to rise between 0.8^{0}C and 5.4^{0}C for the years 2020 and 2080 respectively. However, the highest temperature increased is expected to occur in the Sudanian agro-ecological zone where the rise is expected to reach 3.1^{0}C between 2020 and 2080. This is where the country's major food crops such as Millet, Sorghum, and Cowpea are extensively cultivated by women and where most of the women-led MSMEs and FBAs are located. Recent findings from Amikuzuno and Donkoh (2012)[12] on *Climate Variability and Yields of Major Staple Food Crops In Northern Ghana (*Sudano-Guinea Savannah and Guinea Savannah zones of Northern Ghana) shows high sensitivity to temperature increases with marked decline in the yields for these major food crops.

Table C.2.3: Scenarios of Mean annual temperature change for ecological zones in ^{0}C

Year	Sudan	Guinea	Transitional	Deciduous Rainforest	Rainforest	Coastal Savannah	Average
2020	0.8	0.8	0.8	0.8	0.8	0.8	0.80
2050	2.6	2.5	2.5	2.5	2.5	2.5	2.52
2080	5.8	5.4	5.4	5.4	5.4	5.4	5.47
Average	3.07	2.90	2.90	2.90	2.90	2.90	2.93

Source: Adapted from Minia et al. (2004)

• Declining rainfall patterns

Contrastingly, as observed in Table C.2.3, rainfall patterns are expected to decline considerably across all the six zones. The most drastic rainfall declined expected to occur in the coastal savannah zone with an average rainfall deficit of about 12%. This is closely followed by the rainforest zone with anticipated decline of about 11.9%. However, for the country as a whole, the expected average annual rainfall reduction would range from -2.4% to -16.6% between 2020 and 2080 as shown in Table C.2.4, MacCarthy et al. (2012)[13] using a crop simulation model, to assess the impact of declining rainfall patterns in the Guinea Savannah and Forest-Savannah Transition agro ecologies in Ghana on the yield of the widely cultivated maize variety (*Obatanpa*), observed that maize grain yield will drastically reduce by 19-41% across both agro-ecological zones due to decline in rainfall.

Table C.2.4: Scenarios of Mean annual rainfall change for ecological zones in %

Year	Sudan	Guinea	Transitional	Deciduous Rainforest	Rainforest	Coastal Savannah	Average
2020	-1.1	-1.9	-2.2	-2.8	-3.3	-3.3	-2.43
2050	-6.7	-7.8	-8.8	-10.9	-12.1	-12.3	-9.77
2080	-12.8	-12.8	-14.6	-18.6	-20.2	-20.5	-16.58
Average	-6.87	-7.50	-8.53	-10.77	-11.87	-12.03	-9.59

Source: Adapted from Minia et al. (2004)

• Trends in weather extremes

[12]Amikuzuno, J. and S.A. Donkoh (2012). Climate Variability and Yields of Major Staple Food Crops in Northern Ghana,African Crop Science Journal, Vol. 20, Issue Supplement s2, pp. 349 – 360.

[13]MacCarthy, S.D., S.G.K. Adiku and M. Yangyuoru ().Assessing the Potential Impact of Climate Change on Maize Production in Two Farming Zones of Ghana Using the CERES-Maize Model, Ghana Policy Journal, 5: 27 – 39.

Weather extremes such as flooding, droughts and high temperatures are predicted to increase in Ghana between 2020 and 20280 in all the six agro-ecological zones. For instance, it is predicted that in theTransitional agro-ecological zone, there will be more frequent occurrences of early termination of rainfall and prolonged dry spell especially during the months of July to August. This is predicted to have severe consequences on crop productivity in the zone as it is likely to convert the current bi-modal regime to a uni-modal one. Similarly, in the forest ecological zones of the country, rainfall reductions of about 20% is expected, which is far larger than the 10% reduction anticipated in the Transitional and Savannah agro-ecological zones.

C.2.4: Climate Change Impacts across Agriculture Sectoral activities in Ghana

The economy of Ghana relies heavily on climate sensitive sectors such as agriculture, energy and forestry. Close to 70% of the population depends directly or indirectly on agriculture (fisheries, crop and animal farming etc.). Any anomaly in the climate thus, affect the whole economy of Ghana, particularly small holders' who depend on rainfed agriculture with very limited adaptation capacity. Additionally, the limited use of irrigational facilities (less that 0.89% of cultivated land is under irrigation) makes the situation even worst. Consequently, majority of Ghanaians small holders farmers, who live in the rural areas and thrive mainly on rain-fed farming, become disproportionately vulnerable since they are most exposed to hazards such as bush fires, flooding and droughts and are least capable of adapting to such hazards. It has been estimated that due to climate change, the maize and other cereal crop yields are likely to decline by 7% by 2050.

Ghana's agriculture sector is currently experiencing a range of climate impacts, mainly caused through unreliable, irregular and unpredictable rainfall patterns. Indiscriminate deforestation reduces soil vegetation cover which reinforces the problem of poor or degraded soils from intensive or bad cultivation practices. Prolonged periods of drought increase the population of pests such as the variegated grasshoppers, which damage harvests (e.g. cassava) and threaten food security. In addition, higher temperatures lead to lower yields throughout the agriculture sector and puts livelihoods at risk. (GoG, 2011a[14])

As indicated above, the agriculture sector is highly vulnerable because it is largely rain-fed with a very low-level of irrigation development. In fact, the predicted increased rainfall variability, and overall drop in rainfall will increase the chances of drought periods and probably reduce agricultural productivity. In the dryer transition zone above Kumasi, bushfires and overexploitation have eliminated several forest reserves. According to research, bush burning, a widely applied land management practice by many farmers with the intention to improve soil fertility, has demonstrated to have devastating effects on the environment. In livestock rearing areas bush burning often destroys livestock's fodder for the dry season.It has been estimated that due to climate change, the maize and other cereal crop yields are likely to decline by 7% by 2050. (GoG, 2011b[15])

Moreover, Schlenker and Lobell (2010) showed that compared to average yields over the period 1961-2006, mean yields of maize, sorghum, millet and groundnuts will decrease by about 20% towards the middle of the century (2046-2065). Using crop yields for 2000 as the base year, Nutsukpo et al. (2012) found that by 2050, climate change would cause an overall yield to decrease of less than 25% for rainfed maize and rice and above 25% for groundnuts. However, regional variations in yield were observed with yield increases being projected in some areas (De Pinto, Demirag, Haruna, Koo, & Asamoah, 2012). With the 1990/1991 cropping season as the base year, cassava yields are expected to decrease by 3%, 13.5% and 53% in 2020, 2050, and 2080, and cocoyam yields are projected to decrease by 11.8%, 29.6% and 68% in 2020, 2050 and 2080, respectively (Armah, et al., 2011; Olesen, Chirinda, & Adiku, 2013).

C.2.5. Programme Measures Expected to Address Climate Impacts in the Agricultural Sector.

[14]GoG. (2011a). Ghana's Second National Communication to the UNFCCC. Republic of Ghana in collaboration with GEF, UNDP end EPA.

[15]GoG. (2011b). Promoting a value chain approach to climate change adaptation in agriculture in Ghana. The Republic of Ghana in collaboration with the UNFCCC.

Climate-Resilient Agricultural (CRA) practices have been found to mitigate climate impacts on agriculture productivity and to generate additional benefits, by increasing resilience to floods and droughts (FAO, 2012; USAID , 2017). CRA practices can in fact contribute to improving soil quality and potentially double the yield per hectare (USAID , 2017). An overview of the potential benefits that could be generated by the selected CRA practices under this programme are provided in Table C.2.5. The results from the USAID (2017) study in Ghana provide the framework for the intervention in the Savannah agro-ecological zone to help women-led MSMEs and FBAs adopt climate-resilient agricultural practices that will help minimize the impacts of climate variability on agricultural production.

Table C.2.5: **Summary of Associated Benefits with Selected CRA Practices in Ghana**

CRA practice	Soil erosion	On-farm biodiversity	Carbon sequestration	Soil biodiversity	Water availability	Political and social capital *
Minimum tillage	Reduces soil erosion	Increases species of plants per unit area	Improves air quality by sequestering carbon	Increases soil fertility through increased decaying organic matter	Increases water infiltration by slowing flow of water	No significant effect
Improved agronomic practices, *e.g. crop rotation*	Reduces soil erosion	increases on-farm plant diversity (i.e. weeds)	Improves air quality by sequestering carbon	Increases soil fertility through decaying biomass and carbon in the soil	Increases water infiltration by slowing flow of water	Increases social (through labor) and political capital
Integrated nutrient management, *e.g. efficient fertilizer application, split application, timing*	Reduces soil erosion	Increases species of organism per unit area	Improved air quality through reduced ammonia emission from manure storage facilities	Increases soil fertility through decaying biomass and carbon	Enhances infiltration because of improved soil structure	Increases political and social capital (technical expertise and decision making capacity)
Improved genetic resources, *e.g. hybrid seeds to improve yield without changing production practices*	No significant impact	No significant impact	No significant impact	No significant impact	No significant impact	Increases political and social capital
Mixed cropping to make efficient use of inputs	Reduces soil erosion	Increases species of plants per unit area	Enhances carbon sequestration	Increases soil fertility (from crop residues)	Enhances water infiltration	Increases social and political capital
***Increased social and political capital is through interaction with other farmers, extension agents, development partner and government agencies promoting specific CSA practices.**						

Source: Adapted from USAID (2017).

C2.6. Climate Change and the Energy Sector in Ghana

As shown in Table C.2.6, over 50% of primary energy supply in Ghana comes from fossil sources such as oil and natural gas followed by over 40% from biomass. This figure has critical implications for emissions in Ghana when more than 90% of energy supply comes from sources that contribute to carbon emission.

Table C.2.6. Primary Energy Supply (ktoe) in Ghana from 2008 to 2017

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Oil (ktoe)	2,672	2,316	2,744	2,820	3,870	4,011	4,177	4,248	4,746	4,086
Oil (%)	*42.6*	*38.4*	*39.5*	*37.1*	*46.3*	*46.8*	*45.7*	*44.5*	*49.9*	*42.5*
Natural Gas (ktoe)		5	394	769	390	292	621	1,182	692	1,146
Natural Gas (%)	-	*0.1*	*5.7*	*10.1*	*4.7*	*3.4*	*6.8*	*12.4*	*7.3*	*11.9*
Hydro (ktoe)	533	591	602	650	694	708	721	503	478	478
Hydro (%)	*8.5*	*9.8*	*8.7*	*8.5*	*8.3*	*8.3*	*7.9*	*5.3*	*5.0*	*5.0*
Solar (ktoe)	-	-	-	-	-	0	0	0	2	2
Solar (%)	-	-	-	-	-	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
Biomass (ktoe)	3,070	3,127	3,207	3,371	3,409	3,554	3,629	3,618	3,601	3,902
Biomass (%)	*48.9*	*51.8*	*46.2*	*44.3*	*40.8*	*41.5*	*39.7*	*37.9*	*37.8*	*40.6*
Total	**6,275**	**6,039**	**6,947**	**7,610**	**8,363**	**8,565**	**9,148**	**9,551**	**9,520**	**9,614**
Total (%)	***100***	***100***	***100***	***100***	***100***	***100***	***100***	***100***	***100***	***100***

Source: Ghana Energy Commission, 2018[16].

About 5% of the primary energy sources comes from hydro. However, the impacts of climate change during dry seasons are characterized by the frequent power outages which has been derogatively referred to as ("dumsor"). The situation is critical especially in the Savannah zone where energy access is below the national average and reliability of the power system is unfortunately very disappointing.

As shown in Tables C.2.2. and C.2.7 due to lack of reliability of energy supply from hydro and the frequent power outages, several households and enterprises have resorted to the use of diesel based generators, firewood and charcoal for cooking and processing of agro-products. In the Savannah Zone, as demonstrated in Table C.2.2,over 98% of energy sources for cooking in the Savannah agro-ecological zones comes from biomass –exacerbating the problem of deforestation and emission of carbon. Many households in this area rely on agricultural residues and firewood with consequent impacts on declining soil fertility and deforestation.

Table C.2.7. Final Energy Consumption (ktoe) in Ghana from 2008 to 2017.

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Grid Electricity (ktoe)	597.7	615.4	674.2	772.1	851.9	908.4	919.8	832.9	981.7	1,039.8
Grid Electricity (%)	*11.5*	*10.8*	*12.0*	*12.5*	*12.9*	*13.2*	*13.2*	*11.6*	*13.9*	*14.9*
Petroleum (ktoe)	2,071.3	2,597.7	2,491.1	2,826.6	3,172.1	3,303.0	3,271.7	3,544.6	3,274.2	3,115.0
Petroleum (%)	*39.9*	*45.5*	*44.3*	*45.8*	*48.0*	*48.0*	*46.9*	*49.5*	*46.5*	*44.6*
Biomass (ktoe)	2,517.8	2,493.3	2,463.9	2,575.6	2,588.8	2,676.0	2,791.7	2,784.7	2,783.4	2,829.4
Biomass (%)	*48.5*	*43.7*	*43.8*	*41.7*	*39.1*	*38.9*	*40.0*	*38.9*	*39.5*	*40.5*
Total	**5,186.8**	**5,706.3**	**5,629.2**	**6,174.3**	**6,612.8**	**6,887.4**	**6,983.2**	**7,162.2**	**7,039.3**	**6,984.2**
Total (%)	***100***	***100***	***100***	***100***	***100***	***100***	***100***	***100***	***100***	***100***

Source: Ghana Energy Commission, 2018.

C.2.7. Programme Measures Expected to Address Climate Impacts in the Energy Sector.

Apart from the fact that the biomass and fossil-based energy systems are relatively inefficient, not reliable and

[16]GEC (2018). National Energy Statistics, 2008 – 2017.
http://www.energycom.gov.gh/files/ENERGY_STATISTICS_2018_FINAL.pdf

unsustainable, they also pose serious health and safety hazards and contribute to deforestation and other environmental problems. As noted above, the use of fossil-based fuel for lighting also contributes to the atmospheric emission of carbon dioxide (CO2). This programme will promote the use of biogas for lighting, cooking and agro-processing and for transportation (biogas powered tractors and combine harvesters). It will also promote the use of off-grid solar to power agro-equipment such as milling machines and to light warehouses and agribusiness facilities as well as the use of solar irrigation systems.

Ironically, waste from ruminants such as cattle, sheep and goats, human waste (liquid and solid waste), food and agro wastes that are posing sanitation and waste management challenges in Ghana are actually sustainable "resources" that could be transformed into clean and affordable energy to help improve accessibility and reliability of energy supply for the women-led MSMEs and FBAs. This is one of the reasons why the project is focusing on anaerobic digestion of waste (biogas technology) to provide renewable energy for diversified use by the women-led MSMEs and FBAs. Biogas technology presents great opportunities for decentralized (off-grid) and diversified (multiple uses such as for stoves, refrigerators and generators) energy use. It is also the only renewable energy technology that is able to address multiple challenges such as waste management, access to energy, and improving agricultural productivity. Other products of anaerobic digestion include effluent, sludge or bio slurry. Compared to composting, anaerobic process reduces nitrogen loss from 50-80% to just 5-12%. It also increases ammonia content by 120% and quick-acting phosphorus by 150% and increases agricultural yield by 11% per year (McGarry et, 1978; Gregory, 2010)[17]. Other benefits of biogas technology include improved sanitation, sustainable land use, improved environmental health, climate change mitigation by reducing atmospheric emission of methane, costs savings and optimizing water use through recycling and reuse and providing green jobs (for example for masons, carpenters, electricians).

Ghana demonstrated interest in biogas technology in the late 1960s. However, the government devoted attention to the technology in the mid 1980s to provide energy for domestic cooking. Most of the biogas plants broke down as a result of immature technology and poor dissemination strategies (Bensah and Brew-Hammond, 2010[18]) presents extensive information about the history of biogas technology in Ghana. For example, the Appolonia Integrated Rural Energy Project was commissioned in the early 1990s. It was the first large scale biogas project in the nation. It was aimed at providing street lighting and electricity for small load appliances for all the households in the community. The feedstock was made up largely of cow dung and human 'waste'. The biogas was used to run a 12.5 kVA generator which provided power for street and home lighting, while the bio-slurry was used as fertilizer. This large scale biogas failed due to several factors. Among these factors were lack of maintenance, the difficulty of collecting and transporting manures from the kraals that are usually of considerable distance from the bio-digesters, low technical capacity, poor attitude and lack of cooperation from stakeholders in the community. A recent study of 50 biogas plants in Ghana indicated that about 44% are currently in operation.

However, since 2005, the application of biogas technology in Ghana has taken a significant leap with commercial end-users such as Fiesta Royal Hotel, Central University, University of Ghana and several hospitals constructing bio-digesters for biogas[19]. The Government is currently building about 10,000 bio latrines that will have bio-digesters instead of septic tanks to use the human waste as feedstock.

The AFAWA programme is putting in place operational modalities to guide the sitting of the bio-digesters close to sources of feedstock and the bottling of biogas for both cooking and transportation use. According to the Fourth Assessment Report (FAR) of the Intergovernmental Panel on Climate Change (IPCC), the global warming potential

[17] McGarry, Michael G. and Jill Stainforth. 1978. Compost, Fertilizer, and Biogas Production from Human and Farm Wastes in the People's Republic of China. Ottawa: International Development Research Centre.
Gregory R. 2010. China Biogas. http://www.ecotippingpoints.org/our-stories/indepth/china-biogas.html. Accessed December 2016

[18] Bensah and Brew Hammond, 2010.
http://web.b.ebscohost.com/abstract?site=ehost&scope=site&jrnl=20762895&AN=59309339&h=EuFGXvzVN1r4fB1oy1E4GG4pAFsiwW2tL8qFix1M9Y8EPUd9P%2bnWPp0LItdhsnc4F6yv0PrnpCljADgwkeaLxQ%3d%3d&crl=c&resultLocal=ErrCrlNoResults&resultNs=Ehost&crlhashurl=login.aspx%3fdirect%3dtrue%26profile%3dehost%26scope%3dsite%26authtype%3dcrawler%26jrnl%3d20762895%26AN%3d59309339.

[19] Edward Antwi presents the potential of biogas in Ghana.
https://www.academia.edu/8656650/Biogas_as_a_potential_renewable_energy_source_A_Ghanaian_case_study
Biogas is a low-carbon, climate mitigation technology.

(GWP) of methane over 100 years period of time is 25 times that of CO2 (IPCC, 2007). For this project, the estimated avoided emission of equivalent carbon dioxide is about 2.4 million (160,000 tCO_2eq/yr) tCO_2eq over the LoC tenor about 4 million over the average lifespan of the bio-digester (25 years).

C.2.8: Outcomes and impact of planned program

The programme's outcomes and impacts at all levels (Country's NDC and CCAP as well as GIRSAL) are summarised and presented in Tables C.2.6 while the implementation plan, estimated costs, and log frame are elaborated in Section C.8.1, C.8.2 and H.1.respectively.

Table C.2.6: Programme's Outcomes and Impacts against Ghana's NDC Baseline Targets

Objective	Component	Program Outputs	NDC Baseline Targets	Program Impacts against Baseline Targets
Improve women access to affordable financing to engage in CRA practices for livelihood diversification	1	**Output 1**: Enhanced access to credit facilities for women-led MSMEs and FBAs for implementing CRA practices	Implementation of community-led adaptation and livelihood diversification for vulnerable groups	More than 400 women-led MSMEs and FBAs in 43 administrative districts, provided with access to affordable financing for implementing CRA practices
Support De-risking instruments for the agriculture sector in Ghana	2	**Output 2:** 400 women-led MSMEs and FBAs trained in the adoption of CRA technologies	Scale up penetration of climate smart technologies by 10%. Modified community-based conservation agriculture adopted in 43 administrative districts	400 women-led MSMEs and FBAs trained and supported to adopt biogas technology to generate clean and affordable energy from waste 400 women-led Agric-business enterprises in 43 districts trained and supported to adopt solar irrigation to improve crop productivity
		Output 3:20 LFIs staff and 400 women-led MSMEs and FBAs trained with knowledge and skills for implementing CRA practices and technology uptake	Provide TA for facilitating access to agricultural crop insurance	Additional 400women-ledAgric-business enterprises provided with TA and support to access agricultural insurance facilities in Ghana
		Output 4:250 policy makers and 250 private sector investors equipped with knowledge and skills to 'crowd in' additional private sector investment into CRA	Developing agribusiness linkages and agribusiness' capacity to access finance for climate	Over 500 policy makers and key stakeholders trained on regulatory framework strengtheningthat will

		practices and technology adoption **Output 5:** More than 5 dissemination events completed; publications and promotional materials are disseminated to support policy and regulations on CRA adoption practices.	resilient agricultural activities Promote programs that support capacity building and awareness raising for climate change adaptation and mitigation measures	attract additional private sector investment into CRA activities. More than 400 MSMEs/ FBAs, about 20 LFIs staff including over 250 policy makers and key stakeholders trained on CRA adoption practices and technology for climate change mitigation and adaptation

The programme has great potential for enhancing resilience to agricultural practices in Ghana. Emission reductions are expected from electricity generation (with solar power and biogas to electricity), sustainable land use (from resilient agriculture interventions). The total emission reduction is forecasted to reach 1,939,426 tons of CO_2 in 15 years of the loan tenor and 3,232,377tons of CO_2 in 25 years (or the lifetime of most of the investments analyzed).This is not taking into consideration the avoided emissions from the use of biomass based energy (such as woodfuel and charcoal) as result of the switch to renewable energy. The total avoided carbon emission from major activities of the program is shown in Table E.1.2. For the detailed calculation of impact figures, please refer to Section E.1.

In addition to the avoided carbon emission from major activities of the program, the total number of direct and indirect beneficiaries that will benefit from the program is expected to be 84,420 people at the programme level. The total number of direct and indirect beneficiaries including service providers and population who will benefit from food products is expected to reach 373,720. A detailed breakdown of the beneficiaries is shown in Table E.1.3..

C.2.9: Programme Approach

The Program demonstrates a grass root catalytic potential as well as a very good theory of change for the rural farmer communities in the most vulnerable areas of Ghana with specific focus on women and women owned business in Agribusiness. The following business propositions have been identified as potential key priority sectors where the programme will play an important catalytic role in supporting MSMEs. Focus will be on the most vulnerable areas to climate change in Ghana and oncommercial crop value chains.

Table C.2.10. Basic Statistics of Flood and Drought Risk Mapping for the Agro-ecological Zones.

District	Region	Capital	Ecological zone	Area (Sq. km)	Population
Sisala East	Upper East	Tumu	Sudan Savannah	4,744	51, 182
West Mamprusi	Northern	Walewale	Guinea Savannah	5,013	117,821
Aowin Suaman	Western	Enchi	High forest	2,638	119,128
Fanteakwa	Eastern	Begoro	Deciduous	1,150	132,488
Keta	Volta	Keta	Coastal savannah	1,086	133,661

Source: Ghana Third Communication (2015)

As indicated in Table C.2.10, vulnerability assessment of climate risks based on flood and drought risk mapping shows the Savannah zones with the highest geographical spread (over 66% Area) of flood and drought prone areas in the country.

Figure C.2.5 Incidence of Poverty in Ghana in 1999

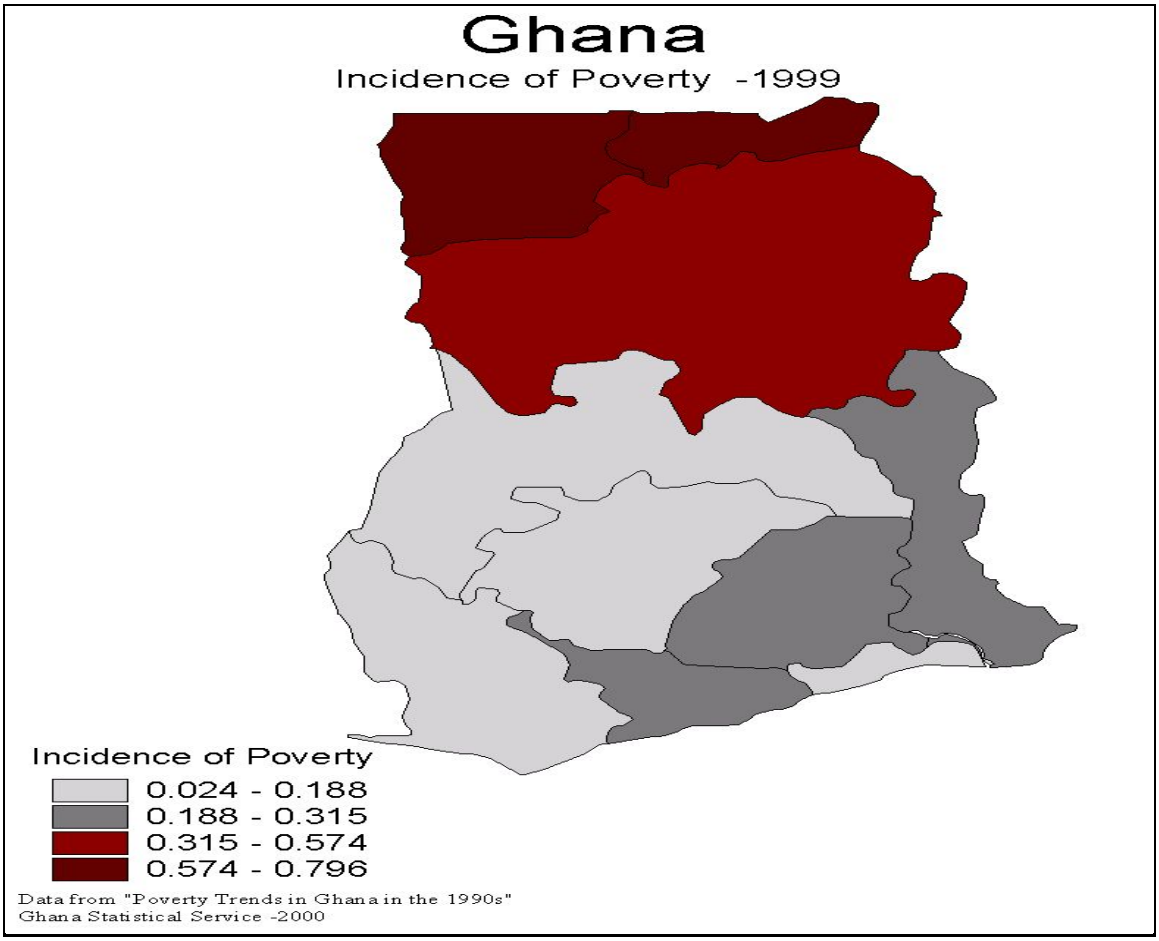


Figure C.2.5 shows the Savannah zone as having the highest incidence of poverty that has critical implications for the capacity and resources to adapt to climate change risks and to recover from potential extreme climate variability.

Table C.2.11. Regional Poverty Trends in Ghana – Depth and Severity (2006-2013).

New Poverty Line	Depth		Severity		Difference (percentage points)	
	2006	2013	2006	2013	Depth	Severity
Western	5.4	5.7	1.9	2.4	0.34	0.41
Central	5.6	5.6	1.8	2.5	0.05	0.65
Greater Accra	3.7	1.6	1.4	0.6	-2.07	-0.76
Volta	9.2	9.8	3.2	4.0	0.66	0.75
Eastern	4.2	5.8	1.6	2.4	1.59	0.82
Ashanti	6.4	3.5	2.4	1.3	-2.86	-1.18
Brong Ahafo	9.5	7.4	3.7	2.9	-2.13	-0.86
Northern	23.0	19.3	12.0	9.8	-3.71	-2.22
Upper East	35.3	17.2	20.4	9.0	-18.17	-11.42
Upper West	50.7	33.2	32.8	18.8	-17.54	-14.01

The programme will focus on women-led MSMEs and FBAs in the most 43 vulnerable districts of Ghana to climate change impacts with incidence of poverty ranging between 0.315 to 0.796 as illustrated in Figure C.2.5 and those with depth and severity of poverty above 19 and 9 respectively as in Table C.2.11. As shown in Figure 6, the regions with the highest incidence of poverty in 1999 were the Northern, Upper East and Upper West Regions. Table C.2.10 indicates that the situation in these 3 regions have not changed much. The regions with the highest depth and severity of poverty are these regions. As shown in Table C.2.3, most of these districts are in the Sudano-Guinea Savannah zones where vulnerability to climate change is very severe.

The programme will focus on agricultural practices that enhance resilience to climate change based on studies by the USAID study in Ghana (USAID, 2017[20]). Climate resilient practices can reduce the strength of climate impacts on agriculture productivity and generate additional benefits by increasing resilience to floods and droughts (FAO,

[20]Cost and Benefit Analysis for Climate-Smart Agricultural (CSA) Practices in the Coastal Savannah Agro-Ecological Zone (Aez) of Ghana. Working Paper, September 2017. file:///C:/Users/akt105093/Downloads/COST_AND_BENEFIT_ANALYSIS_FOR_CSA_PRACTICES_IN_THE_COASTAL_SAVANNAH_AEZ_OF_GHANA.pdf

2012[21]; USAID, 2017). Certain CSA practices can contribute to improving soil quality and potentially double the yield per hectare (USAID, 2017). An overview of benefits generated by selected CSA practices is provided in Table C.2.5 above.

The model for the programme assesses the potential impact of the support provided by the GCF to the implementation of these climate resilient agriculture interventions. It considered a portfolio of climate resilient agriculture interventions for several crops. The implementation of climate resilient practices is considered for 1 hectare of each of the following crops (as well as for a scenario that assumes 30% of the total budget being allocated to agriculture): The crops in consideration are Cassava, maize, okra, pepper, rice, tomatoes, watermelon, and beans.

Table C.2.12. Summary of implementation, maintenance and operation cost of selected CRA management

CRA practice	Implementation cost	Maintenance cost	Operation cost
Minimum tillage	$ 691	$ 70	$ 387
Improved agronomic practices, *e.g. crop rotation*	$ 220	$ 200	$ 489
Integrated nutrient management, *e.g. efficient fertilizer application, split application, timing*	$ 63	$ 31	$ 0
Improved genetic resources, *e.g. hybrid seeds to improve yield without changing production practices*	$ 689	$ 63	$ 0
Mixed cropping to make efficient use of inputs	$ 717	$ 72	$ 97

Source: USAID, 2017.

As shown in Table C.2.12, these climate resilient agricultural practices have incremental costs. However, the benefits are worth pursuing them to enhance the resilience of the communities who depend on agriculture for livelihood and where climate risks could negatively impact agricultural productivity.

Table C.2.13. Summary of positive externalities obtained from selected CRA management practices

	Reduction in soil erosion	Increase in biodiversity	Improvement in air quality	Increased soil biodiversity	Improvement in water availability	Improved social capital	Improved political capital
Minimum tillage	$ 21.90	$ 10.60	$ 2.50	$ 25.00	$ 37.50	$ 12.00	$ 15.80
Improved agronomic practices, *e.g. crop rotation*	$ 8.70	$ 7.80	$ 2.50	$ 17.80	$ 11.30	$ 13.10	$ 16.30
Integrated nutrient management, *e.g. efficient fertilizer application, split application, timing*	$ 16.30	$ 29.30	$ 27.40	$ 9.80	$ 27.50	$ 19.90	$ 15.50
Improved genetic resources, *e.g. hybrid seeds to improve yield without changing production practices*	$ 4.50	$ 7.50	$ 2.50	$ 5.00	$ 5.00	$ 0.00	$ 0.00
Mixed cropping to make efficient use of inputs	$ 33.80	$ 15.00	$ 10.00	$ 24.00	$ 28.80	$ 14.00	$ 12.00

Source: USAID, 2017.

Table C.2.13 shows some of the positive externalities from implementing these climate resilient agricultural

[21]FAO. (2012). Identifying opportunities for climate-smart agriculture investments in Africa. Rome: Food and Agriculture Organization of the United Nations - Economics & Policy Innovations for Climate Resilient Agriculture.

practices in climate vulnerable areas.

The program also envisages to provide other agricultural inputs such as solar pumps and efficient irrigations systems to address scarcity and variability of rainfall and particularly during periods of drought. These other climate resilient measures come with incremental costs. As shown in Figure C.2.6, most of the women-led MSMEs and FBAs also lack basic processing facilities such as milling equipment for value addition.

Figure. C.2.6 Some members of women-led FBAs using rudimentary processing methods.

Source: WFP, MOFA and GSS, 2012

The programme is therefore also focusing on enhancing access to inclusive loan product to enable women-led MSMEs and FBAs afford processing equipment such as milling machines as well as storage and packaging facilities for value addition and increased efficiency and profitability that will ultimately enhance their capacity to handle climate risks.

Moreover, as shown in Table C.2.6, most households with access to electricity in these vulnerable areas such as the Northern Region are below the national average. Many households in this area rely on agricultural residues and firewood with consequent impacts on declining soil fertility and deforestation. The use of fossil-based fuels (such as kerosene) also poses serious health and safety hazards such as harmful indoor air pollution. The use of fossil-based fuel for lighting also contributes to the atmospheric emission of carbon dioxide (CO_2).

Fortunately, these areas also have greater potential for biogas. There are a number of households in these areas with between 10 to 50 cattle and several other household animals such as goats, sheep and poultry generating

enormous amount of waste. The ‘waste’ are all ‘resources’ or good feedstock for biogas. The energy from biogas could be used to provide lighting (for example with 50 KVA 40 KW biogas genset) and to power agro-processing and storage facilities to improve agricultural value addition, storage, food processing and to reduce post-harvest losses. The bio slurry from the biogas plants could also be applied as organic fertilizer to improve agricultural yield. The bio slurry could improve the yield of rice, maize and soy (About 8% increase in yield of rice and maize according to research by Chengdu, 1980).

The sustainable treatment of these "wastes" may also help to address the vicious poverty cycle arising from poor sanitation and health-related hazards. It is estimated that with an average annual biogas generation of 11,589,065 m3 from assuming conservatively that just about 0.5% of the cattle, goats & sheep, poultry, and other ruminants will be applicable as well as agro, food and human waste from the target women-led MSMEs and FBAs. The previous challenges of transporting feedstock to the sites of the bio-digester that caused some issues for biogas technologies adoption in Ghana has been addressed by sitting of bio-digesters insitu. This has encouraged greater adoption of biogas technology in Ghana by notable institutions such as the Central University, University of Ghana, Fiesta Hotel. The insitu sitting of bio-digesters will be ensured by this programme.

This annual biogas generation could produce about 22,307,992.62 kWh of electricity every year and about 334,619,889.34kWh of electricity over the loan tenor of 15 years. This will help reduce about 105,629 tCO2eq of emission every year and close to 1,584,440.23 tCO2eq of emission over the loan tenor period of 15 years. The programme will also focus on off-grid solar energy for lighting and other productive uses.

Due to the incremental costs of these climate resilient activities (the low-carbon technologies also enhances the resilience of agricultural production), it is appropriate to develop an inclusive loan product with below market rate and longer tenor to enable the women-led MSMEs and FBAs to adopt these practices.

C.3. Project / Programme Description

Describe the main activities and the planned measures of the project/programme according to each of its components.

The programme will provide LoC (Component 1) and Technical assistance (Component 2)to women-led MSMEs and FBAs, which are defined as the following:

General Definition of MSMEs

In this programme, the definition for MSMEs proposed by Afful-Koomson et al. (2014)[22] for Ghana is used. This is based on the following quantitative variables described in Table C.3.1.

Table C.3.1: Quantitative variables for defining MSMEs in Ghana

Category	Quantitative Aspects
Medium Enterprise	Employs between thirty and hundred people; has a total annual turn-over in the range of GHS138,000 to GHS 352,000; and with fixed assets not exceeding $1,000,000.
Small Enterprise	Employs between ten to twenty nine people; has a total annual turn-over in the range of GHS 15,000 to below GHS 138,000; and with fixed assets not exceeding more than $100,000.
Very Small and Micro Enterprises	Employs between one to nine people; has a total annual turn-over between GHS2,400 and GHS15,000; and with fixed assets not exceeding $10,000.

Source: Adopted and modified from Afful-Koomson et al. (2014)

In summary, the programme defines MSMEs as those enterprises that employ from 1 to 100 employees and have financial needs up to USD$ 1 million. This definition of MSMEs includes farm-based associations such as producers' associations and cooperative societies if they meet the requirements described above in Table C.3.1.

Since the programme targets women-led MSMEs, the following additional criteria will apply in the selection in addition to those listed in Table C.3.1:

- A formally registered agric-business enterprise with more than 51 percent women's ownership(more than 51% of the firm's assets holding or shares are owned by a woman; this will be assessed and validated against firm registration information and the share of profits during the tenor of the sub-loans);
- At least 30% women on the Board of Directors or in senior management positions;
- Minimum firm size of about 5 employees of which, 60% are women[23];
- Activities are mainly carried out along the agricultural value chain;
- Track record of loan repayments;
- Operational bank account of more than 5 years;
- Records and book keeping;
- Agriculture land holding of between 5 and 15 ha; and
- Any other characteristics deemed necessary by the FIs

FBAs: General Definition

FBAs (other term is Farmer based Organizations) are defined as association of farmers who come together to

[22]Afful-Koomson et al. (2014). Economic and Financial Analysis of Small and Medium Food Crops Agro-Processing Firms in Ghana. United Nations University Institute for Natural Resources in Africa, Accra, Ghana.
[23]This is mainly to ensure that the benefits of the programme are widely felt by the most vulnerable groups of people at the district and administrative levels. The average employees for MSME are 40 and 30 for FBA.

pursue a common goal to foster improvement in their areas of operations. Some of the reasons for forming FBAs include the need for improving bargaining and negotiation power, achieving economies of scale in operations, improving quality control and better access to finance and market[24].

The major difference between MSMEs and FBAs is that while MSMEs may have other ownership structures such as sole proprietorship, FBAs are jointly owned and democratically controlled or managed by the members of the FBA. The Ministry of Food and Agriculture in Ghana has a Secretariat that oversees the activities of FBAs/Os and have a registry of FBAs/Os in the country.

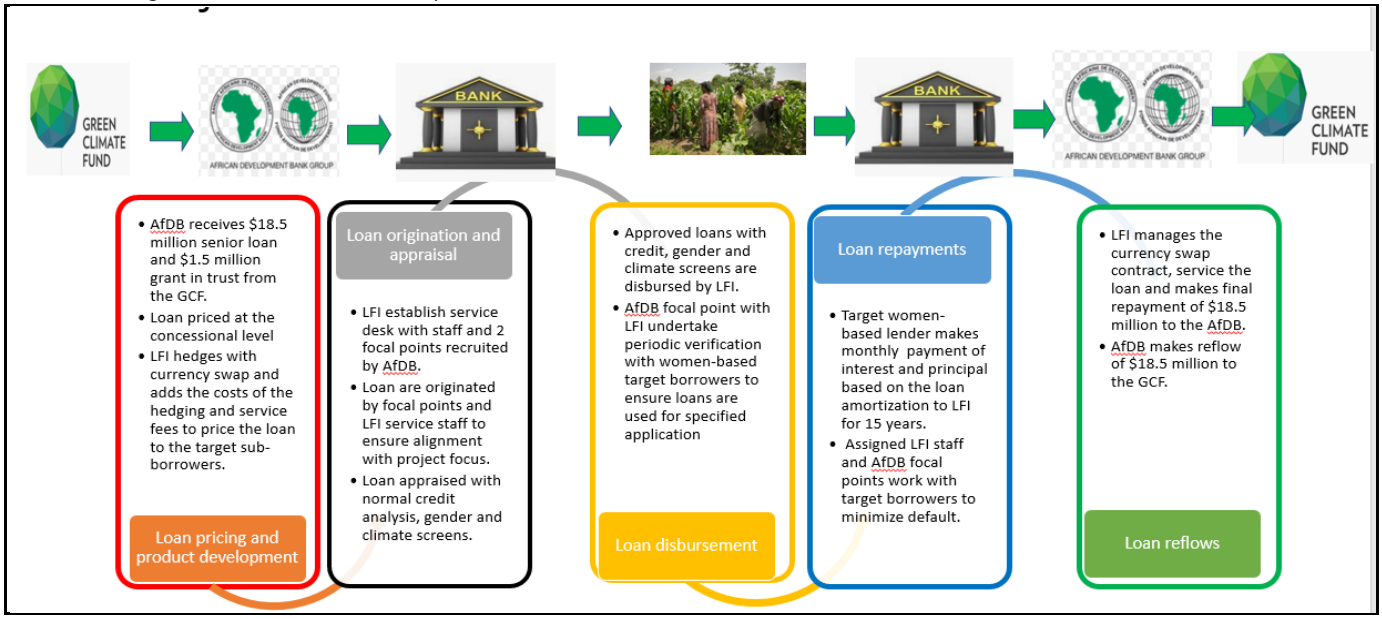
The criteria for selecting FBAs will be similar to that of the MSMEs as follows:

- A formally registered FBA/O with the MOFA;
- The size of the Association must not be less than 5member with at least 60% of the members being women;
- Activities are mainly carried out along the agricultural value chain;
- Track record of loan repayments;
- Operational bank account of more than 5 years;
- Records and book keeping;
- Agriculture land holding of between 5 and 15 ha; and
- Any other characteristics deemed necessary by the FIs

Component 1: Line of Credit for Women-owned Businesses in Climate Resilient Agricultural Activities:

As shown in Figure 8, component 1 will involve the following processes: i) Loan pricing and product development; ii) Loan origination and appraisal by the banks; iii) Loan Disbursements through the banks; iv) Loan repayment by the women-led MSMEs and FBAs; and v) Loan reflow from the banks to AfDB and to the GCF.

Figure 8. Key processes for the Line of Credit for Women-led MSMEs and FBAs. (subject to the terms and conditions agreed in the Term Sheet).



[24] MOFA, 2009. Report on the national consultative workshop on the development of farmer based organizations (FBOS) in Ghana. http://www.fbosecretariatghana.com/sites/default/files/documents/Consultative%20Workshop%20on%20the%20Development%20of%20FBOs%20-%20May%202009.pdf

Description of the Processes involved in the LoC Facility

1.1 Loan Pricing and Product Development.

As noted in Section B.3, the high monetary policy rate, inflation and lack of effective regulation in Ghana has led to some banks and microfinance institutions charging between 35% and 40% on short term loans. Moreover, due to the greater reliance of financial intermediaries on short-term deposits, they are not able to provide adequate credit for investments such as off-grid solar or irrigation that normally require medium-to-long-term finance. There is therefore the need for the development of a loan product that will support low-carbon and climate resilient investments. Without, this loan product, it will be impossible to achieve the expected carbon emission reductions and improvements in resilience of farm ecosystems and livelihoods of women-led MSMEs and FBAs to climate risks and uncertainties. Pursuant to this loan product development, the AfDB is engaging the LFIs that will provide affordable loan products to target women-led beneficiaries with a longer tenor. LFIs have expressed concerns over currency risk and have indicated their preference for lending in local currency (rather than hard currency such as US dollar) due to the high inflation rate and currency risk in Ghana..

The AfDB is requesting a senior loan of US$ 18.5 million from the GCF at a concessional rate. Due to the preference of potential LFIs for local currency lending, the AfDB will assist LFIs to secure currency swap at competitive rate to hedge the loan against currency risks. This loan product will complement GIRSAL credit guarantee, agricultural insurance, technical assistance facility and digital finance platform that are being implemented with financing from the AfDB[25]. GIRSAL is already capitalized with $65 million from the Government of Ghana (GoG) and $14.1 million senior loan with 30 years tenor and 5 years grace period from the AfDB. Since the AfDB has already provided funding for the risk-sharing facility it will not be appropriate to also provide senior debt for on-lending through LFIs. This will present critical moral hazard for AfDB to have investment exposure at the risk-sharing facility and at the credit facility.

1.2 Loan Origination and Appraisal

The programme is focusing on activities in the agricultural value chain that are very vulnerable to climate change or have great potential for improving diversification, linkages and integration (e.g. energy-waste management-agriculture linkages) and could contribute to strengthening resilience of ecosystems, communities and livelihoods for women-led MSMEs and FBAs. For these reasons, GCF financing will be channeled through LFIs for activities in the 1. Agro inputs and equipment; 2. Production and aggregation: and 3. Processing, storage and packaging as described in Figure 10.

Figure 10. Focus of Sub-Loans

The AfDB and LFIs will set up a service desk with at least 2 staff dedicated to training other bank staff for the specified services and lending to the target borrowers. The AfDB will also recruit 2 Investment Advisors (1 for pre loan disbursement and 1 for post loan disbursement as described in 1.4 below) and embed them in LFIs as focal persons to work with the LFIs staff at the service desks. LFIs GH staff and one AfDB investment advisor will be involved in the financial advisory services and loan origination. In addition, the AfDB investment advisors will undertake due diligence to ensure the borrowers are really women-owned or led but not some women fronting male owned MSMEs/FBAs to gain access to the concessional credit and also ensure that credit provided are for the eligible items shown in Figure 10. For these reasons, apart from the usual credit appraisal based on financial characteristics of the borrowers, primary screening against the climate change and gender-related criteria will be

[25]GIRSAL is currently looking to implement GIRSAL credit guarantee and technical assistance facility. Sub-Loans with GCF proceeds will be complemented by those instruments provided by GIRSAL. Later, GIRSAL will operate an agricultural insurance and digital finance platform per its mandate.

conducted.

Demand scoping was done with initial deal pipeline to estimate the potential demand size. Key information on for example, ownership and capital structure, current amount of debt and repayments (including status of repayment), capital budgeting and financing requirements were gathered during this demand scoping for the women-led MSMEs and FBAs. An estimated financing need of over $15 million will ensure a high absorption rate in the first three years. The summary of deal pipeline is provided in Annex 4.

1.3 Loan Disbursements.

The AfDB will create a sub account for the GCF proceeds and disburse US$ 18.5 million to LFIs after the due diligence is complete, the loan agreement between AfDB and LFIs is signed and the LFIs has met all conditions for disbursement such as appropriate ESMS/ESMF and gender policy. LFIs will keep the loan in USD on its books as liability. Where necessary, the AfDB will work up measures with LFIs to avoid commingling of the GCF proceeds with its own capital and measures to avoid LFIs using the GCF proceeds to lend to other clients at higher interest rates rather than the target women-led MSMEs and FBA borrowers. Once the loan application is approved based on the credit, gender and climate screens, LFIs will disburse the loan to the target borrowers at below market rate in GHS. The AfDB investment advisors (post loan disbursement) with the LFIs staff will undertake periodic random verification with women-led target borrowers to ensure the GCF loan proceeds are used for intended areas. AfDB and LFIs will sign a loan agreement in USD for USD 18.5 million. LFIs will enter into a hedging agreement to advance loans in GHS.

1.4 Loan Repayments and Reflows.

The target women-led MSME and FBA borrowers will make monthly payments of interest below market rate and principal based on the loan amortization to LFIs in GHS. To reduce default risks, LFIs GH will approve loans for only farm associations and agribusiness enterprises that are registered business entities. No loan will be approved for individual borrowers. The programme is targeting about 400 women-led MSMEs and FBAs. Moreover, the post-loan disbursement financial advisors will work with the borrowers to provide advisory services for example efficient cash management systems to enable them service the loan and thereby reduce default risks. Among the criteria for partnering LFIs is because it has expressed interest as being a GIRSAL bank and the lending from the GCF resources will also be covered under the GIRSAL credit guarantee. The partial risk guarantee provided by GIRSAL is expected to reduce default risks of Sub-Loans. The assigned LFIs staff and AfDB focal points will also work with target borrowers to minimize such default

1.5 Reflow of funds.

This will involve accounting and managing the reflow of funds received from LFIs through the GCF trust account for this programme in the AfDB and to GCF account with its Trustee. Repayment of the GCF proceeds from LFIs to GCF through AfDB will be made in USD.

Ghana Incentive-Based Risk Sharing System for Agricultural Lending (GIRSAL)

This programme is designed to complement the Ghana Incentive-Based Risk Sharing System for Agriculture Lending Project (GIRSAL), which is financed by AfDB and the Government of Ghana. The AFAWA Coordination Unit will work in complementary arrangements with GIRSAL to help mutually reinforce the outcomes and outputs from GIRSAL and the programme. With GCF's participation in this programme GIRSAL will be complemented with gender and climate change dimensions.

- **Credit Guarantee Scheme (CGS):** This would entail the provision of guarantees to participating commercial banks and other financial institutions on an individual or portfolio basis. All banks and other financial institutions which shall be eligible for guarantees under the CGS, are prohibited from financing items under the AfDB's Negative List.

- **Technical Assistance Facility (TAF):** This would involve capacity building for both Financing Value Chain actors (supply side actors) and Agriculture Value Chain actors (demand-side actors). Capacity building targeting demand side actors (such as input suppliers, producers, aggregators, processors, trade & logistics) will include training to improve farm and financial management, value addition and marketing. GIRSAL will also provide coaching and advisory services targeting Micro, Small and Medium Enterprises (MSMEs). GIRSAL will provide technical training through the Banking and Insurance Colleges of Ghana to enhance the capacity of financial intermediaries to assess and manage agricultural credit risk.

- **Agriculture Insurance Facility (AIF):** GIRSAL guidelines have made provisions for borrowers to purchase insurance policies (where the local market provides appropriate insurance at competitive prices). The pairing of guarantee and insurance products offers a more holistic de-risking solution and could have positive impact on risk-adjusted interest rates over the long run. GIRSAL will collaborate with Ghana Agriculture Insurance Pool; the insurance regulator to define the regulatory framework for agriculture insurance in Ghana. The GIRSAL implementation team has initiated discussions with re-insurers such as SwissRe and AfricaRe to share costs development and rollout new products.

- **Digital Finance Platform (DFP):** GIRSAL's cloud-based platform that would facilitate GIRSAL reporting, and development of predictive models. The platform consists of 3 elements:

(i) Secure web applications that support: a guarantee application portal; payments portal and knowledge and innovations center portal (KIC);

(ii) A Risk scoring engine to be used by lenders in making credit guarantee applications decisions, and by GIRSAL to make guarantee approval decisions. The engine presents yet another innovative opportunity for automating loan risk assessment as well as profiling potential borrowers and

(iii) A data warehouse that integrates information from numerous sources to build Know-Your-Customer (KYC) data on production: transaction, insurance coverage, input purchases, sales and purchases. The portal will allow capability for integrating information from Credit, Reference Bureaus, Academic Institutions, Mobile Money providers, utilities etc.

GIRSAL is championed by the Ministry of Food and Agriculture (MoFA), Ministry of Finance (MoFin) and the Bank of Ghana (BoG) and is aligned with the Ghana Shared Growth and Development Agenda II" (GSGDA II)'s outlook for improving sustainability of the Agriculture sector. This National Development Strategy identifies the need to develop appropriate agricultural financing instruments (including the warehouse receipts system and agriculture insurance schemes) to mitigate the key risks faced by farmers.

The Bank of Ghana's Agriculture Sector Policy articulates its mandate for price and macro-economic stabilization. BoG has historically supported indirect schemes in agriculture first under the Rural Finance Inspection Department (now part of the Banking Supervision and Treasury Departments of BoG). Furthermore, it has in the past played a significant role in administering donor schemes such as: Shareholder Credit, Input Supply and Marketing Project (SCIMP).

The sector priorities as defined in the Food and Agriculture Sector Development Policy (FASDEP) identified agricultural finance as one of leading constraints for private sector investment. The high risk perception for agriculture investments (both real and perceived) presents a disincentive for financial institutions to enter this increasingly lucrative sector. Even with interest rates as high as 30-35% p.a, commercial lending to the agriculture sector only accounts for 4 % of total lending. The target capitalization of GIRSAL is between US$56 million to US$134 million which will correspond to credit to the sector of US$ 285milion to US$421 million respectively in 5 years. Bank of Ghana has set aside $USD25 million for GIRSAL project, and with AfDB commitment of UA10 million (appx US$15 million) would make a total of $US40 million for the first phase of set up with provisions made for additions to the initial capital over the life of the facility. The fact is that with proper management GIRSAL is able to leverage and crowd in 5 - 10 times the current amount lent out to agriculture by the commercial banks amount in the next 10 years.

Component 2:Technical Assistance for Development of Climate Resilience Agricultural Value Chain:

As highlighted in Afful-Koomson et al. (2014)[26], there are five critical challenges confronting SMEs and MSMEs involved in agric-business ventures in Ghana. There are those related to lack of access to appropriate technology due to the high cost of processing equipment and the limited capacity of firms to mobilize capital to purchase labor saving technologies especially when it has to be imported. This makes agricultural operations time consuming, labor intensive with limited opportunity for scaling up. Also, the authors identified inadequate financing and access to formal credit as a constraining factor affecting the development of the small scale agricultural industries in Ghana. This is highly correlated with the risk involved in the agricultural value chain for most FIs. There is also the challenge of losses along the agricultural value chain (Post-harvest losses -PHL). It is estimated that close to 50 percent of perishable food commodities such as fruits, vegetables, roots and tubers in Ghana are lost every year, through PHL. For example, post-harvest losses in Maize, Cassava, Yam and Rice amount to over 35.1 percent, 34.6 percent, 24.4 percent and 6.9 percent respectively. These losses are as a result of ineffective food processing technologies, careless harvesting and inefficient post-harvest handling practices. It is also due to damages during transportation because of bad roads, inappropriate market practices and inadequate storage facilities. Lastly, there is also the challenge of lack of managerial skills and training to access the growing global adaptation finance earmarked for agriculture.

The grant request from the GCF to the tune of $1.5 million will be provided to women-led MSMEs and LFIs GH in the form of technical assistance (TA) to improve their technical and business skills, which are key to addressing the numerous challenges raised above. For Component 2, AfDB will be an executing entity to procure services to the other parties as described below.

Sub-component 2.1:Capacity building for CRA adoption practices and technologies uptake: designed to lay the ground work for programme implementation among women-led beneficiaries, This is basically to ensure that the targeted beneficiaries have the capacity to understand the programme objectives, selected CRA intervention options such as minimum tillage, processing, storage, packaging and marketing opportunities, CRA technology options such as solar irrigation and biogas, and fully understand the operationalization of the programme. The Directorate for Women in Agricultural Development with the Ministry of Food and Agriculture will lead this activity. However, the AfDB will have the general oversight and also handle all procurement of goods and services such as consultants for the activities.

To fully achieve sub-component 2.1, five capacity building workshops are planned for the five year duration of the programme. The goals are to: (1) raise awareness among target beneficiaries on the use of new CRA practices and new adoption technologies such as biogas and solar irrigation; (2) train beneficiaries on value addition and productivity measures in the agriculture value chain such as food crop processing and packaging; (3) train beneficiaries on the uptake of social protection mechanisms such as weather index-based crop insurance facilities; (4) train selected beneficiaries as '**Training of Trainers'** (ToT) on CRA adoption practices and technologies uptake; and, (5)use the TOT to support the implementation of other programme sub-components.

Five Local consultants with skills in CRA, technology adoption, food processing, renewable energy and water irrigation will be sourced locally (either from the MDAs, NGOs or the universities) to lead the training processes. In the first year of the programme, one capacity building is planned focusing on skills acquisition on CRA adoption practices and technologies uptake among selected representatives of the selected LFIs and Women-led MSMEs and FBAs and other key stakeholders. In year 2, two workshops are programmed covering (1) trainings on value addition and productivity measures in the agriculture value chain such as food crop processing and packaging and (2) agricultural crop insurance facilities and uptake. In year 3, the trainings will focus on (1) '**Training of Trainers'** (ToT) on CRA adoption practices and technologies uptake, and (2) ToT support in the implementation of other programme sub-components.

[26]Afful-Koomson et al. (2014). Economic and Financial Analysis of Small and Medium Food Crops Agro-Processing Firms in Ghana. United Nations University Institute for Natural Resources in Africa, Accra, Ghana. ISBN 978988633851

Sub-component 2.2: Technical Assistance for the LFIs GH and MSMEs/FBAs to support implementation of programme: This sub-component is targeted at training about 20 LFIs staff and women-led MSMEs to support the full implementation of all components of the programme. That is, from programme development (as described above for Component 1) to programme implementation and monitoring. This TA will also target women-led MSMEs and FBAs to access GIRSAL products and services.

Paramount to the success of the programme are: (1) the designated LFIs desk officers assigned to the program being knowledgeable about loan origination targeting CRA investments(capital budgeting, energy audit, production efficiency evaluation etc.,), loan appraisal using credit, gender and climate screens, advisory support to the target borrowers for reducing default risks.(2) Target beneficiaries (women-led SMSEs and FBAs) having the required skills on sub-project development, application of loan request, preparation of business plan and business development, cash management, bookkeeping and business management.

Thus, this sub-component is specifically designed to strengthen the capacity of LFIs and the women-led MSMEs to support programme implementation. On this basis, five capacity building workshops have been factored into the sub-component to achieve the sub-component objectives. Four training workshops planned for the first 2 years of the programme(2 per year) and one in the third year covering all the aspects discussed above. However, in year one, the first two training workshops will focus on loan origination targeting CRA investments, loan appraisal using credit, gender and climate screens, sub-project development and preparation of loan applications for LFIs staff and target women-led SMSEs and FBAs respectively. In the second year, the focus of the workshops will be on MSMEs business plan development, cash management, bookkeeping and business management. The last workshop in year 3 will concentrate on advisory support to the target borrowers for reducing default risks in loan repayments.

Two 'Investment Advisers' (IAs)will be recruited by AfDB to lead the process. Other support services will come from the Sustainable Banking Unit of the (Central) Bank of Ghana, the AFAWA Coordination Unit of AfDB, the Financial Intermediation and Inclusion Division of AfDB, the Climate Change and Green Growth Department of AfDB, and the Coordination Unit of the Climate smart agriculture at the Department of Agriculture and Agro-Industry in AfDB. LFIswill lead this activity. However, the AfDB will have the general oversight and also handle all procurement of goods and services such as consultants for the activities.

Sub-component 2.3: Technical Assistance for strengthening the regulatory framework for private sector investment in climate resilient Agriculture: The legal and regulatory framework for attracting private sector investment into agriculture is currently very weak. According to the 2017 World Bank's Enabling the Business of Agriculture (EBA)[27] report, reforms are needed to improve the quality and efficiency of regulatory systems that govern access to key agricultural factors such as drought resistant seeds, organic fertilizers and bio-slurry from bio-digesters, solar irrigation, off-grid solar for processing and storage, machinery, finance, markets, transport and information and communication technologies. This sub-component is specifically designed to strengthen the regulatory framework for private sector investment in climate resilient agriculture to support activities in the agricultural sector for pursuing Ghana's Nationally Determined Contribution (NDC) targets

As noted above, the legal and regulatory framework for attracting private sector investment into agriculture in Ghana is still very weak. Access to key agricultural inputs such as drought resistant and high yielding seeds, fertilizer, agricultural machineries, credit, packaging and processing equipment, markets, transport and information and communication technologies are still lacking. This therefore limits the opportunity for the private sector to invest into agriculture.

The aim of this sub-component therefore, is to overcome some of these barriers by raising greater awareness among government Ministries, Department and Agencies (MDAs) on the need for institutional reforms targeted at 'crowding in' private sector investment into climate resilient agriculture. Also, there are plans for generating acknowledge product on key reforms needed for strengthening the regulatory framework for private sector investment into agriculture in Ghana. Five workshops are programmed for this sub-components targeting MDAs,

[27]Asare, R., and G. O. Essegbey. 2016. Funding of Agricultural Research and Development in Ghana: The case of the Council for Scientific and Institutional Research (CSIR). Science and Technology Policy Institute, Accra, Ghana: Technology and Investment 2016, 7. Pp40–50

policy makers, private sector investors, input marketers among others. We expect to hold one workshop per year targeting different specialized sectors. For example, input marketers, private sector investors, MDAs, policy makers, agricultural extension officers etc.

One local consultant will be hired to lead each workshop with the required skills needed to facilitate the training. The consultants may come from the universities, from the ToT or from the Ghana's Ministry of Private Sector Development and Investment (PSI) at the State House in Accra. Support will equally be provided by the Private Sector Department of AfDB. The NDA in Ghana will lead this activity. However, However, the AfDB will have the general oversight and also handle all procurement of goods and services such as consultants for the activities.

Sub-component 2.4: Advocacy, knowledge Management and Outputs Dissemination: The aim of this sub-component are to: a) raise greater awareness concerning the AFAWA programme initiative for potential replication and upscaling within and outside Ghana; b) support the development of gender strategy and policy based on programme outputs and outcomes; c) effectively manage lessons learned as well as knowledge generated from the programme design and implementation; and d) to widely disseminate the programme outputs/outcomes.

Five advocacy and dissemination workshops are planned for this sub-component for the entire programme lifespan. At least one workshop event per year. The first workshop (year 1) will be the inception workshop of the programme targeting a wide range of audience including representatives of the target beneficiaries. For each workshop, we planned not to have more than 50 participants. In the second year (year 2) another workshop even will be used as basis for discussing the implementation procedures of the programme including the finalization of necessary agreements between key stakeholders of the programme (e.g., how sub-project components will be evaluated, monitored and reported among others). In year 3, selected target beneficiaries will be brought together in another workshop event to share programme lessons and recommendation for the way forward. The process will be repeated in year 4 targeting a new set of programme. In year five, a final dissemination workshop will be held to share programme outputs and programme achievements. The outcomes will be used to generate several knowledge products that will be widely disseminated via in-prints, policy briefs, monographs etc. Each workshop event will be anchored by a local consultants supported by several facilitators recruited from the TOT. Addition support will be provided by the AFAWA Coordination Unit, the Gender Division and the Climate Change and Green Growth Department of AfDB in close collaboration with the GoG. The NDA in Ghana will lead this activity. However, the AfDB will have the general oversight and also handle all procurement of goods and services such as consultants for the activities.

Component 3: Programme Management:

AfDB will recruit a Program Manager who will have the responsibility for coordinating all the deliverables of the program, monitoring, evaluation and reporting. It will also recruit two well-trained investment officers (1 for pre loan disbursement and 1 for post loan disbursement activities) who will be stationed at the LFIs as focal persons to work with the banks staff at the service desks. Both LFIs staff and the 2 AfDB investment advisors will be involved in the financial advisory services and loan origination. In addition, the AfDB investment advisors will undertake due diligence to ensure the borrowers are really women-owned but not some women fronting male owned SMEs to gain access to the concessional credit and also ensure that credit provided are for the eligible items shown in Figure C.3. 2.

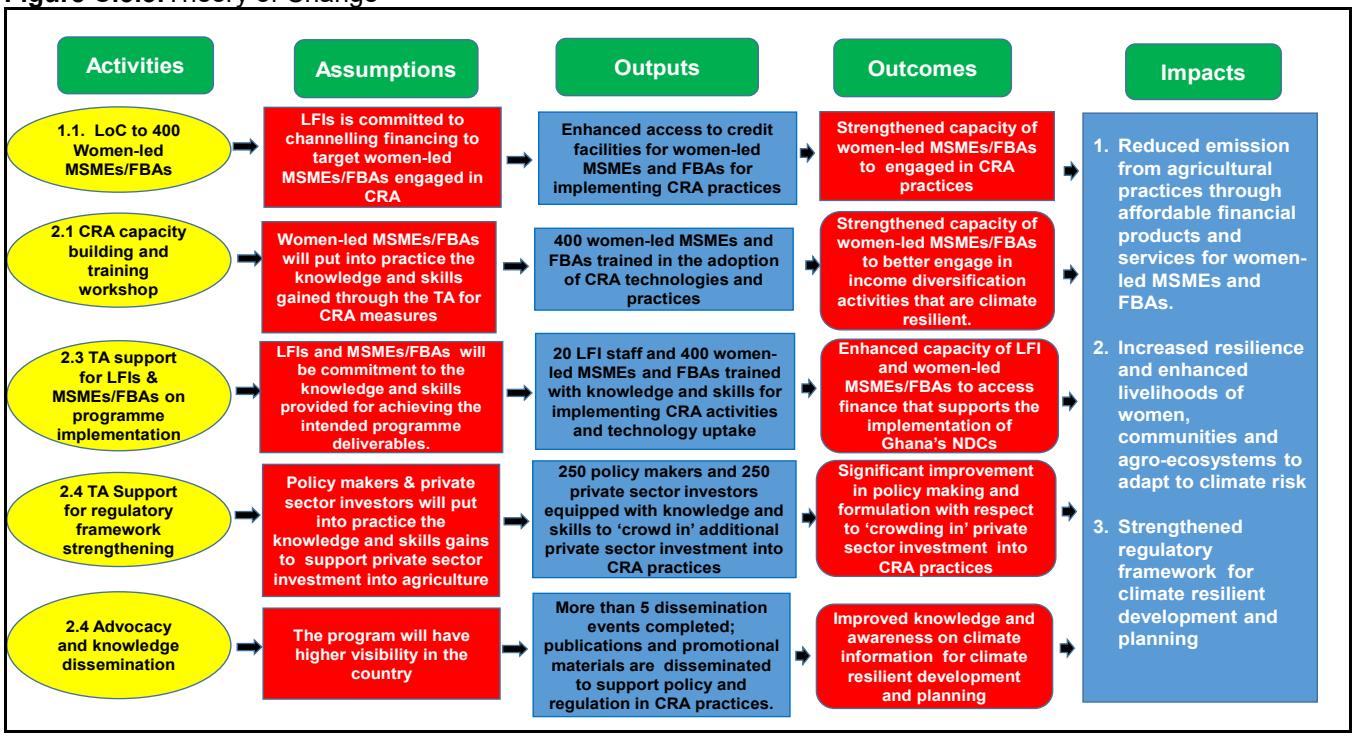
The AfDB will monitor and evaluate the performance result of component 1 and component 2. It will support the information dissemination and knowledge sharing on adaptation benefits and mitigation benefits as well as other climate change benefits relevant to the local environment of Ghana. This component will also report details of successful initiatives and best practices by providing the necessary links to actors in every element of the value chain relevant to climate-related investments. Due to the complementarities of GIRSAL and this programme, key performance from the programme will be showcased as gaps addressed in GIRSAL and information on performance will also be captured in the annual performance report (APR) for GCF.

Summing up the two components above, the program will demonstrate a grass root catalytic potential as well as a very good theory of change for the rural farmer communities in Ghana especially its specific focus on women and

women owned business in the Agribusiness. The following business propositions have been identified as potential key priority activities for the programme for de-risking the agriculture value chain through on-lending, guaranteeing and promotion of innovative finance products such as crop yield insurances

Figure C.3.3 describes theory of change (ToC). The ToC simply demonstrates the relationship between the programme "activities", "outputs" and "outcomes" as well as the main risks that characterized the programme(credit risk, risk associated with the institutional capacity and management[28] as well as those related o skills acquisition and knowledge management in CRA practices and technology adoption [29]). It equally highlights the main programme barriers (access to finance and institutional weaknesses), in order to identify back bone solutions and options for overcoming programme risks and barriers with the overall aim of addressing part of the country's adaptation and mitigation needs emanating from climate change impacts from agriculture.

Figure C.3.3: Theory of Change



C.4. Background Information on Project / ProgrammeSponsor(Executing Entity)

The African Development Bank Group (Bank Group) is the premier pan-African development institution promoting economic growth and social progress across the continent. It is composed of three institutions, namely 1). The African Development Bank (AfDB) which was established in 1964, 2). The African Development Fund (ADF) which was established in 1972 and 3) the Nigeria Trust Fund (NTF) which was established in 1976. Currently, there are 81 members - made up of 54 independent African countries (regional members) and 27 non-African countries (non-regional members).

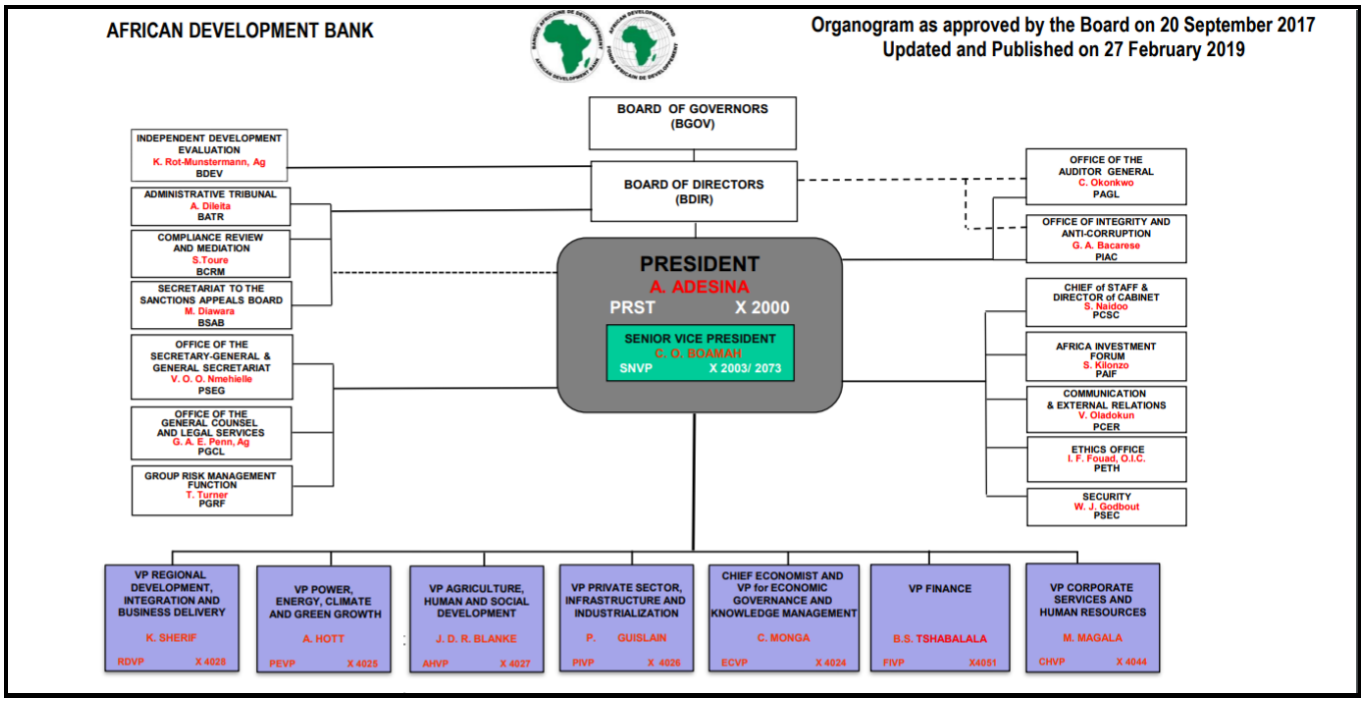
The Bank Group focuses on five development priorities within the framework of its Ten-Year Strategy (2013–2022) aimed at promoting inclusive and green growth. Usually referred to as the "High 5s", the development priorities are

[28] This refers to the targeted MSMEs/FBAs and FIs.
[29] Technical capacity of the target beneficiaries to deal with agricultural risk associated to climate change through greater uptake of CRA practices and technological adoption.

(i) Light Up and Power Africa, (ii) Feed Africa, (iii) Industrialize Africa, (iv) Integrate Africa, and (v) Improve the Quality of Life for the People of Africa.

This programme is intended to support the realization of the "Feed Africa" and the "Improve the Quality of Life for the People of Africa" development priorities. The Bank Group has supported several transformative activities and investments in these priority areas. These include, provision of financing for rural infrastructure (such as roads, irrigation, electricity, storage facilities, and access to markets) to improve agricultural productivity and competitiveness. The Bank Group has also supported several initiatives to strengthen agriculture and food security to improve the livelihoods of particularly the rural populations in Regional Member Countries (RMCs). Because agricultural production in rural communities largely depends on rain-fed irrigation, they are critically vulnerable to extreme weather conditions and uncertainties. It will be unfortunate to pursue an integrated approach to improved agricultural production and food security without the appropriate risk sharing products, access to affordable finance especially for women and services to mitigate the impacts of climate risks.

Figure C.4.1. The Approved Organogram of the Bank Group (27th February, 2019)



The AfDB has financed several related projects and programmes in Ghana totaling over $200 million over the past 10 years. The programme will build on experiences and impacts from these projects and programmes. For example, the AfDB funded the Ghana Rural Financial Services Project (RFS) that played key role in promoting the micro-finance sector in Ghana through increased networking and capacity building and strengthened the overall capacity of rural banks for effective intermediation through technology enhancements, human resource development, and setting up of an apex body for addressing common technical and institutional constraints in the rural banking system. It also encouraged commercial bank intervention in the rural sector through its investments in rural infrastructure and agricultural services aimed at increasing the rural sector's productivity.

The Ghana Livestock Development Project contributed to improved food security, income of small holder livestock and dairy farmers, livestock processors and traders and increased import substitution of livestock and livestock products in an environmentally sustainable manner. The Ghana Rural Enterprises Programme III (REP III) helped trained 39,690 master craftsmen and 32,840 agro-processing clients in the construction, repair and maintenance of farm and agro-processing equipment and provided access to Rural Enterprises Development Fund (REDF) loans

for 27,000 small and medium enterprises (SMEs) including women-led MSMEs. The Ghana Savannah Zone Agricultural Productivity Improvement Project (SAPIP) will help increase farmers' food and nutrition security and incomes through increased agricultural productivity and diversification; and enhance the creation and strengthening of agribusinesses to increase incomes of actors along selected value chains on a sustainable basis.

The African Development Bank's Feed Africa Strategy has identified innovative financing as critical to mobilizing resources to enable agricultural transformation. The Risk Sharing Financing Mechanism has been proposed as one of the flagships for the Feed Africa Strategy and is premised on developing de-risking instruments, technical assistance, integrated ICT platforms, performance management and incentives that would bridge the gaps between the agriculture and financing value chains.

Ghana has taken the lead under this initiative with 'Ghana Incentive-Based Risk-Sharing System for Agricultural Lending (GIRSAL) Project', which is designed within the context of Ghana's ongoing agricultural transformation. GIRSAL therefore offers a packaged solution to:

- Fix agricultural value chains in order to provide a reliable platform for de-risking agricultural lending;
- Mobilize financing for Ghanaian agribusiness by using credit guarantees to address the risk of default;
- Provide technical assistance through capacity building across the value chains;
- Reduce the cost of borrowing by agricultural producers from commercial banks;
- Provide technical advice to agribusinesses

Central to its success is to reduce the financing gap that exists with respect to women's access to finance. Women in business are known to demonstrate solid repayment behavior, and have solid track record as savers, often through informal institutions such as unregulated Savings and Credit Cooperative Organizations (SACCOs) and Rotating Savings and Credit Associations (ROSCAs). Another compelling characteristic of women finance behavior is the smaller and much more frequent nature of transactions. Women are more reliant on cash transfers, calling for delivery channels that improve access, such as mobile and online services. Convenience is an important driver in the usage of financial services for women. Unfortunately, the size of the branch network of banks in African countries is marked by low density, especially in rural areas, where most women are in the 'Bottom of the Pyramid' (BOP). Besides, approximately 65% of women-led SMEs in developing economies are either unserved or underserved financially.

The Bank's Affirmative Action for Women in Africa (AFAWA) programme is a direct response to these challenges and is committed to mobilize funding of up to USD 300 million to address the financing gap that exists with respect to women's access to finance. This existing gap widely affects women ability to take advantage of economic opportunities and access resources that can help them start, operate and grow their businesses. The AfDB Climate Change Action Plan II (CCAPII) Pillar 3: mobilizing financial resources to finance climate action in Africa from both the bank's internal resource and external climate change funds like the GCF and Pillar 4 of the same action plan, which is creating an enabling environment as well as building adequate institutional capacity in which climate-related investments can be effectively designed and implemented.

As such this programme is of key strategic importance to the AfDB as well as to Government of Ghana (GoG) as it would lay the preparatory groundwork for potential upscaling. It is in this context that the GCF grant is required to provide technical assistance in form of capacity building and institutional strengthening of women-led agribusiness MSMEs and financial intermediaries including the monitoring and evaluation of programme activities, outputs and outcomes. The grant will act as a catalyst to the initial investment, which will pave the way for potential upscaling of the 'Ghana Incentive-Based Risk-Sharing System for Agricultural Lending (GIRSAL)'.

LFIs

AfDB will select local financial institutions that will act as co-EE for the lending facility. The selection criteria for the LFIs are as the following:

1. The LFI must be a banking or financial company authorized to provide loans and duly incorporated and licensed in the Host Country;
2. The LFI complies with the Accredited Entity's selection, compliance and eligibility policies and procedures;
3. The LFI has sufficient internal procedures to be able to implement the Funded Activity with technical assistance;
4. The LFIis capable of complying with the Accredited Entity's procurement procedures;
5. The LFI has AML/CFT and ESS policies that are satisfactory to the Accredited Entity;
6. The LFI has track record in MSME and agriculture lending;
7. The LFI is committed to climate finance and agriculture lending to women-led MSMEs and FBAs; and
8. The LFI has signed the Master Agreement with GIRSAL.

C.5. Market Overview (if applicable)

In Ghana, agriculture is becoming an important sector, accounting for 30% [or 38%] of GDP and employing around 45% of the country's workforce. Agriculture is key to overall economic growth. Despite the size of the agricultural sector, Ghana is a net importer of several key agricultural products, such as rice, wheat, sugar and poultry (FAO, 2015). Small-scale producers, with average farm size of about 1.2 hectares, dominate Ghana's agriculture sector. Relatively basic technology is used and hence leads to low crop yields (FAO, 2015). Currently, the tractor-farmer ratio stands at 1:1,500, suggesting that productivity increases in Ghanaian agriculture are potentially significant (WTO, 2014). In 2010, Ghana had an estimated 11 tractors per 100 square kilometers of arable land, compared to 43 and 25 tractors in South Africa and Kenya, respectively.

Agricultural Sector Outlook in Ghana

The agriculture sector contributes more than one fifth of Ghana's GDP; agricultural exports—principally cocoa—is a key source of foreign exchange. Still, overall sector growth has remained low (MoFA 2015). This was confirmed by the recent Joint Sector Review (JSR) of the implementation of the Food and Agriculture Sector Development Plan (FASDEP) and the Agriculture Sector Investment Plan (METASIP II). An estimated two-thirds of Ghanaian manufacturing depends on agricultural inputs; hence agriculture's performance has also been important for the competitiveness of non-oil manufacturing (World Bank, 2009; and Breisinger 2008). While agricultural output is increasing, the sector's growth performance has been highly erratic, and the average annual agricultural growth rate is well below both the overall GDP growth rate and the target, which is set at 6 percent per annum. According to a world bank study (2016) more than 80 percent of the workforce in Ghana is employed in the informal sector. Most of those employed in the informal sector operate in three main occupational categories: agriculture and fisheries (55 percent), craft and related trading (13 percent), and agro-related services and sales (13 percent).

Ghana Agricultural Market Insights

As stated earlier Agriculture is fundamental to Ghana's economy and employs almost 60% of the population and accounts for 23% of the national GDP in 2012. Cocoa is the major export agricultural commodity in the sector. Maize is a crop of prime importance for Ghanaian agriculture, so much so that the growth of agriculture in Ghana can be assessed from the fact that the production of maize reduced from 1.95 million metric ton in 2012 to 1.76 million metric ton in 2014, – a 5% reduction in the CAGR. The major reason behind the reduced production was low and erratic rainfall. Although its share of GDP has decreased in recent years, it continues to be vital to growth.

Market Dynamics

Agriculture in Ghana is well-supported by the government. The Ghanaian government has recently introduced an

agriculture insurance program to provide draught insurance for maize, soya, and other agricultural products, which is a major relief for the farmers, with the prevalent climatic conditions in Ghana (see Box C.3.2 for linkage with GIRSAL). The climate is a major restraint for agricultural production in the country and, apart from that usage of traditional seeds and rudimentary technology, leads to an insufficient yield. There is also a lack of finance toward agricultural activities (training, technical assistance, etc.), which is essential to keep up with the competition in the international market.

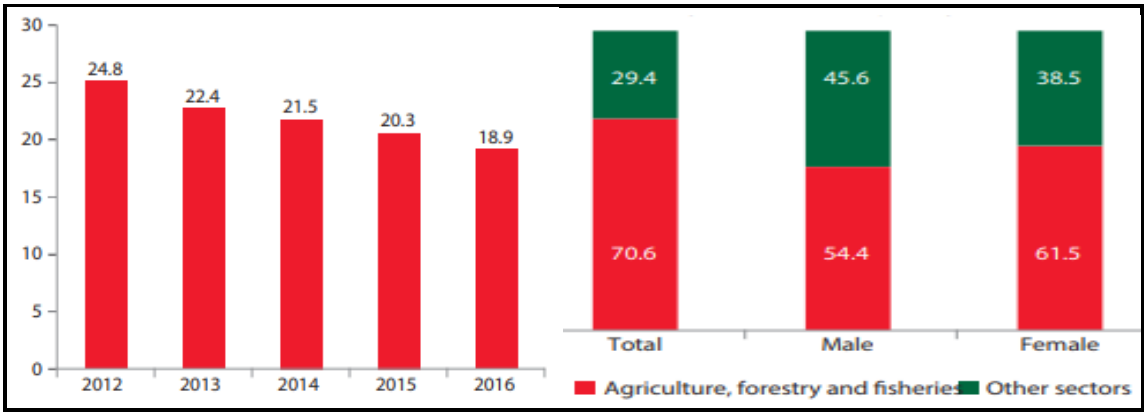
Market Segmentation:

In Ghanaian agriculture, the majority, 85%, consists of staple crop production, with livestock, poultry, and fishery accounting for 10%, and forestry less than 1%. The major agricultural commodities produced in Ghana are cocoa, cereal (maize, rice, millet, sorghum), tuber (cassava, yam), cashew, rubber, fruit (pineapple, pawpaw), and vegetables. Among these, maize is the most widely cultivated crop, followed by rice.

Trade Analysis:

Despite being agriculture-centric, Ghana is not able to cater to its own domestic demands and has to import large number of crops to satisfy its domestic needs. Cereal crops are the most imported commodity in Ghana, and among them, rice and wheat are the leading imports. A total of 698,570 metric ton of rice was imported to Ghana in 2016. Vietnam was the largest exporter. Cocoa is one of the largest exports for the Ghana market, with export volume of 581,375 metric ton in 2016. The Netherlands is the largest importer of cocoa from Ghana.

Agriculture Contribution to GDP (%): 2012–2016 ***Parentage of Sector by gender): 2015***



Source: world Bank development indicator/ Ghana Agricultural Sector

Hence, the importance of the agricultural sector in job creation and poverty reduction cannot be underestimated. The analysis in the private sector diagnostic indicates that agribusiness has among the highest multipliers (1.8) and creates 750 jobs for every additional U.S. million dollars of output (World Bank 2017). Following significant progress in poverty reduction over the past decade, moderate and extreme poverty rates as well as inequality have hardly changed in recent years (World Bank 2016b). Meanwhile, the international experience has shown that agricultural growth reduces poverty by about three times as much as non-agricultural growth (Christiansen et al. 2013; and Christiansen and Kaminski 2015). In addition to fostering poverty reduction and inclusive growth, investments and policies designed to support agricultural productivity will be critical to facilitate the structural transformation of the Ghanaian economy and to manage the ongoing process of urbanization. Growth in agriculture is, on average, at least twice as effective in benefiting the poorest as growth generated in nonagricultural sectors.

There is evidence that many countries that had relatively high agricultural growth rates saw substantial reductions in poverty. For example, China's rapid growth in agriculture and reforms favoring agriculture were initially responsible for the rapid decline in rural poverty from 53 percent in 1981 to 8 percent in 2001. Agriculture was also the key to

India's slower but still substantial long-term decline of poverty. Ghana has reduced rural poverty by 24 percentage points over 15 years, mainly due to strong agricultural performance. But success in agriculture does not always reduce poverty. In Bolivia and Brazil, where agricultural growth has been concentrated in a dynamic export-oriented sector of large capital-intensive farms, agricultural employment declined and shifted to higher-skilled, higher-wage workers, with little poverty reduction effects (World Bank 2008).

Challenges of Agricultural Transformation in Ghana

Public spending on agriculture is low both by regional and international standards and have weakened in recent years. It was estimated that there was only 5.2 percent of total spending between 2001 and 2014. Agricultural spending has also declined sharply relative to sectoral output, and by 2014 it equaled just 1.3 percent, far below the rates of regional comparators, such as Burkina Faso (8 percent), Ethiopia (6 percent), Uganda (5 percent), and Kenya (4 percent)[30] (see also Figures 1.2.9 and 1.2.10). A large share of agricultural spending is devoted to the cocoa subsector. A considerable share of agricultural spending goes to the cocoa sub-sector. Excluding the cocoa subsector has a major impact on the estimated size of agricultural spending in Ghana. For example, between 2006 and 2011, the share of public agricultural spending devoted to the cocoa subsector averaged three times the subsector's share in total agricultural output (World Bank 2013).

Most of the public spending in agriculture is on operating expenses. A large share goes to cover recurrent expenditure of the ministry, leaving a very modest envelope for investment (Akroyd and Smith 2007). Since 2011, the MoFA's expenditures have risen sharply in nominal terms, even as overall spending for the sector has declined. Development partner's donors' account for much of the increase in MoFA spending. Donor contributions to the MoFA rose from GH¢98.5 million in 2013 to GH¢160.1 million in 2014, while domestic public spending for the MoFA fell from GH¢108.2 million to GH¢73.0 million. Thus, donor financing expanded from 17 percent of the MoFA's budget in 2006 to over 50 percent in 2014.13 Public spending on agriculture is not well targeted and efficiency is low. Agricultural spending is not well targeted[31].

Week legal and regulatory framework for private sector investment

The legal and regulatory framework for attracting private sector investment into agriculture is weak. According to the 2017 World Bank's Enabling the Business of Agriculture (EBA)[32] report, reforms are needed to improve the quality and efficiency of regulatory systems that govern access to key agricultural factors such as seed, fertilizer, machinery, finance, markets, transport and information and communication technologies. Ghana fairs well compared to other countries in terms of access to fertilizer, finance, water, and ICT but needs improvement in terms of seed regulation, machinery, markets, and transport. In an earlier assessment of the agribusiness indicators undertaken in 2012, it was observed that Ghana's regulatory environment was not so conducive to attracting strong private sector investment, relative to other comparator countries. The regulations governing access to key factors required for agribusiness investment were still seen to be somehow restrictive or limiting, relative to the best practice benchmarks (World Bank 2012).

Climate Change Effect on Agricultural Activity in Ghana

Historical data for Ghana from the year 1961 to 2000 clearly shows a progressive rise in temperature and decrease in mean annual rainfall in all the six agro-ecological zones in the country. Climate change is manifested in Ghana through: (i) rising temperatures, (ii) declining rainfall totals and increased variability, (iii) rising sea levels and (iv)

[30] 3rd Ghana Economic Update: Agriculture as an Engine of Growth and Job creation (2018) world Bank
[31] Government of Ghana, 2017. Labor Force Survey Report. Ghana Statistical Service/World Bank. Accra, Ghana
[32]Asare, R., and G. O. Essegbey. 2016. Funding of Agricultural Research and Development in Ghana: The case of the Council for Scientific and Institutional Research (CSIR). Science and Technology Policy Institute, Accra, Ghana: Technology and Investment 2016, 7. Pp40–50

high incidence of weather extremes and disasters. (UNDP, 2013)

Approximately 72% of the whole land area of the country is considered vulnerable to desertification, which is already affecting 40 % of the territory. According to the National Action Programme to Combat Drought and Desertification, the land area prone to desertification has almost doubled in the last decades. The expected raise in population growth and food demand in the next decades will exacerbate this problem. Land degradation associated with the loss in the quality and quantity of vegetative biomass and with deforestation—one of the major direct causes of land degradation in Ghana— has a major impact on ecosystem services (i.e. reduction of provision of wood and non-wood forest products for both for domestic consumption and for export; biodiversity loss; instability in hydrological regimes; reduction in the land's resilience to natural climate variability and natural hazards). For example, the Volta River and Lake—which provide several ecosystem services that form the basis for a rich biodiversity and other environmental goods— have been increasingly damaged by severe environmental degradation in the form of lake level fluctuations, water scarcity, nitrification, and siltation mainly from watershed erosion and deforestation. (GoG, 2011b)

Climate change adds to the complexity of managing the agriculture sector in the future. Two areas stand out: Extreme precipitation—the catastrophic floods in 2007 immediately followed by drought were indicative of the high variability in climate and hydrological flows in Northern Ghana. In the decade 1986 to 1995 parts of the country have had the most devastating rainfall events and a relatively high number of 24-hour maximum rainfall events. Increases in temperature have been observed over all basins. Drought—the Northern Savannas have been affected by frequent droughts and flooding, both accompanied by high temperatures and intense heat. Notable effects of climate change, such as insufficient rainfall during the major cropping season (the last major severe drought was in 1982–83), affect more than 12 million people. The impacts are economy wide, including crop failure or losses, outbreaks of diseases, and dislocation of human populations.

Already today, Ghana's agriculture sector experiences a range of climate impacts, mainly caused through unreliable, irregular and unpredictable rainfall patterns. Indiscriminate deforestation reduces soil vegetation cover which reinforces the problem of poor or degraded soils from intensive or bad cultivation practices. Prolonged periods of drought increase the population of pests such as the variegated grasshoppers, which damage harvests (e.g. cassava) and threaten food security. In addition, higher temperatures lead to lower yields throughout the agriculture sector and puts livelihoods at risk. (GoG, 2011a)

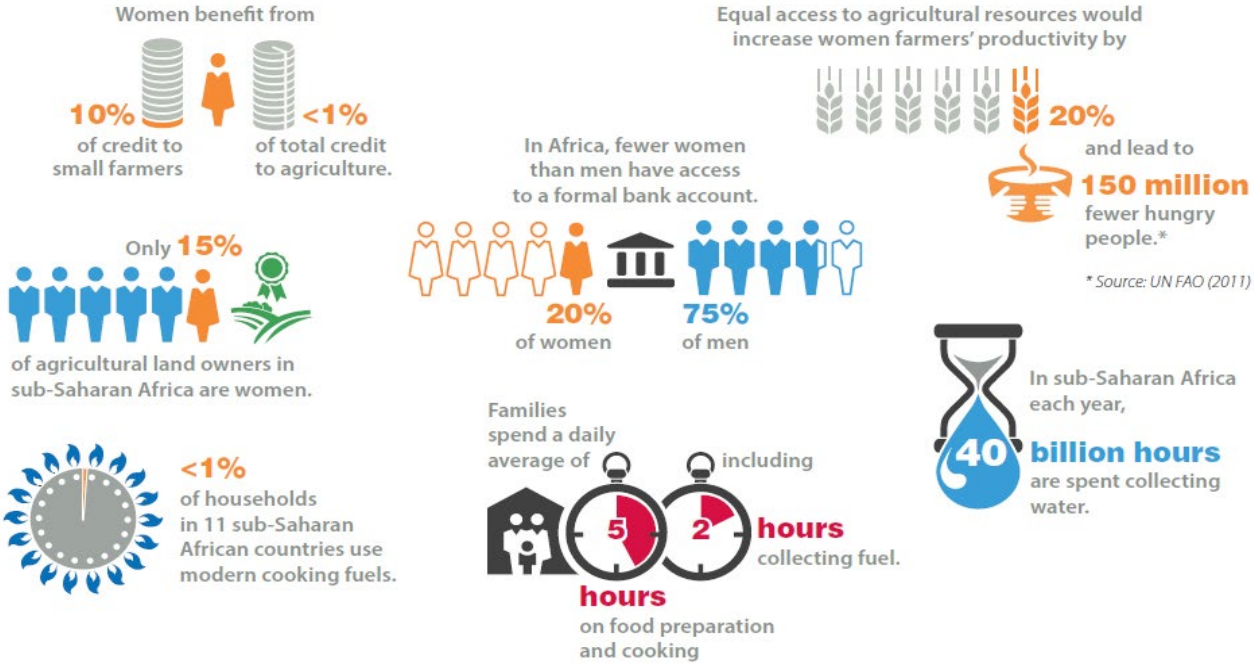
The agriculture sector is highly vulnerable because it is largely rain-fed with a very low-level of irrigation development. In fact, the predicted increased rainfall variability, and overall drop in rainfall will increase the chances of drought periods and probably reduce agricultural productivity. In the dryer transition zone above Kumasi, bushfires and overexploitation have eliminated several forest reserves. According to research, bush burning, a widely applied land management practice by many farmers with the intention to improve soil fertility, has demonstrated to have devastating effects on the environment. In livestock rearing areas bush burning often destroys livestock's fodder for the dry season. (GoG, 2011b)

Gender-sensitive response to climate change in the agricultural sector

Women in Ghana are on the frontlines of the impact of climate change, but they are poorly equipped to make the necessary adaptations. Nonetheless, women's abilities to work with the changing environment are vital to their quality of life and to the survival of their communities. In the agricultural sector, climate change has serious implications on all aspects of food security, and women farmers currently account globally for 45-80 per cent of all food production in developing countries depending on the region. In Ghana, more than 85 percent of the female labor force are engaged in agricultural work. Due to climate change impacts, traditional food sources become more unpredictable and scarcer, and women face loss of income as well as harvests. The fact that women are often excluded from decision-making on access to and the use of land and resources critical to their livelihoods, makes them particularly vulnerable to climate change.

This programme will play a critical role in empowering women entrepreneurs to improve their agricultural productivity and implement climate resilience agricultural activities with co-benefits.

Figure. 11. Some Challenges of Women and Benefits from Affirmative Measures for Equal Access to Agricultural Resources in Sub-Saharan Africa.



C.6. Regulation, Taxation and Insurance (if applicable)

Provide details of government licenses or permits required for implementing and operating the project/programme, the issuing authority, and the date of issue or expected date of issue.

The programme does not require a specific permit for implementation. However, generally, regulations have been overly arduous for private investors in Ghana's agriculture sector. For example, seed registration can take up to six months. The limitations of seed inspectors present a problem and there is inadequate funding for inspectors to visit often-remote certified seed production sites to maintain quality standards, which means smallholder producers often do not have access to quality seeds. Despite a number of regulations and policies facilitating commercial agribusiness and the development of cash crops through international investments, agribusiness investments have been patchy, given the complexities of investing in agricultural land and limited supply of high-quality seed infrastructures.

No regulatory permits are required for LFIs to operate. LFIs will have to only sign the Master Agreement with GIRSAL in order to participate in the GIRSAL project.

Describe applicable taxes and foreign exchange regulations.

By virtue of its status, AfDB is exempt from all national taxes and consequently, there would be no obligation on the participating bank to withhold and remit withholding tax on the interest income earned by either AfDB or GCF. AfDB will not withhold any taxes from the reflows to be transferred to GCF.

The Deposit Money Banks that act as intermediary banks would nonetheless be liable to withholding taxes on their income and have the responsibility to compute and remit these taxes accordingly. General tax regulations related to the sector include the following:

- **Approaches and changes to tariffs**: which are sometimes inconsistent leading to apprehension from investors in cash crops destined for export such as rubber, rice and cocoa (AGRA, 2014).
- **High number of policies regarding trade liberalization and application/exemption from VAT** for agricultural products traded within the region which impacts investment.
- **Inconsistency in government-applied import duties and fluctuations** that impact the competitiveness of Ghanaian private production of crops like rice.
- **Exemptions on import tariffs and VAT** on agricultural machinery and spare parts.
- **Numerous import charges that reduces access** to equipment for investors in agricultural production.

There is also no foreign exchange regulations related to the programme. Through the Ghana Investment Promotion Centre Act 1994, the GoG initiated a wide range of economic instruments to incentivize private investment in agriculture and agro-industries. This include for example, tax breaks that have been offeredtoencourage geographical diversification of farming and agro business locations. However, incentives have tended to focus on processing and manufacturing linked to agriculture and have found to only have had limited effect on the location of investment within Ghana; this remains concentrated in the south and within the Free Zones around Tema and Accra.

Provide details on insurance policies related to project/programme.

There is minimal Information on insurance and guarantees. However, the Ghana Agricultural Insurance Programme (GAIP) was set up in 2011 by GIZ. This includes drought index insurance for maize soya, sorghum and millet, as well as broader crop insurance that have been tailor-made to cover the various risks experienced by commercial farmers and plantations.

C.7. Institutional / Implementation Arrangements

Please describe in detail the governance structure of the project/programme, including but not limited to the organization structure, roles and responsibilities of the project/programme management unit, steering committee, executing entities and so on, as well as the flow of funds structure. Also describe which of these structures are already in place and which are still pending. For the pending ones, please specify the requirements to establish them.

As shown in Figure 12, the overall coordination of implementation will be handled by the AfDB, led by the AFAWA Coordination Unit in collaboration with the Financial Intermediation and Inclusion Division, the Climate Change and Green Growth Department and the Coordination Unit of the Climate smart agriculture (CSA) at the Department of Agriculture and Agro-Industry in AfDB. AfDB will have the overall oversight of Components 1, 2 and 3 of the programme.

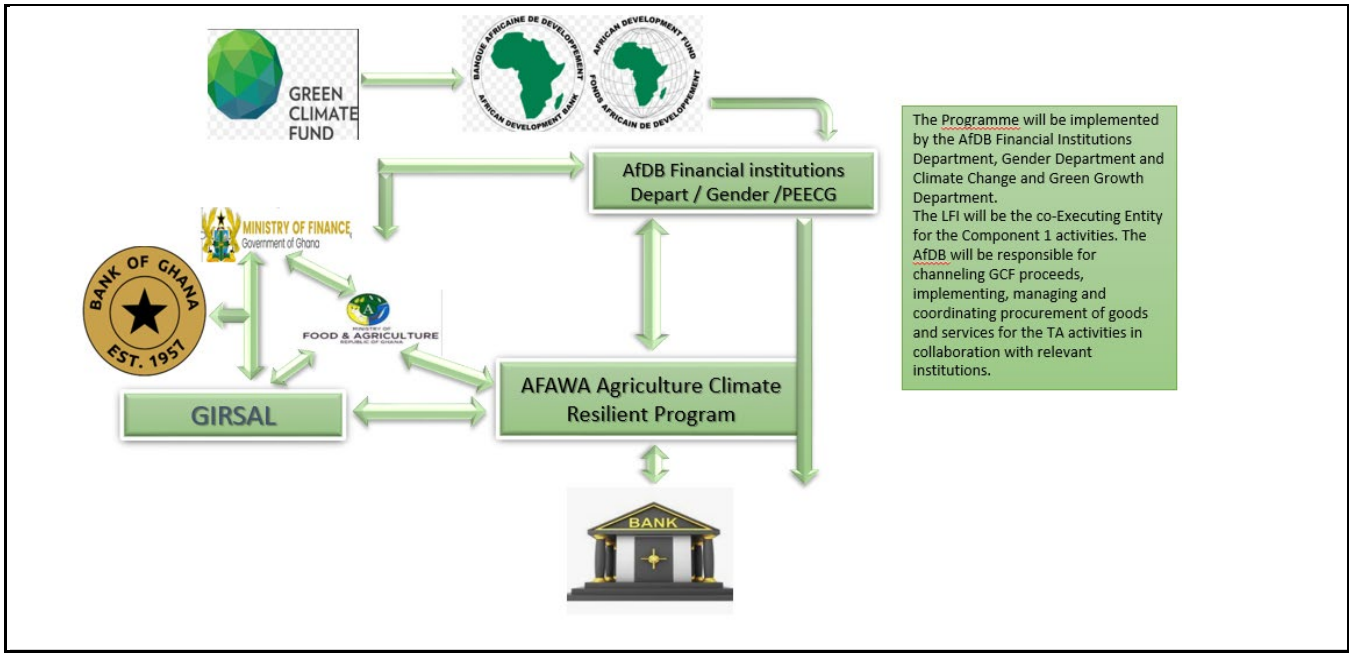
A Program Manager to be embedded in the AFAWA Coordination Unit of the AfDB will have the overall oversight of implementation and coordination within the AfDB and with relevant stakeholders in Ghana, procurement for technical assistance, the 2 investment advisors, monitoring, evaluation and reporting. The two investment advisors will be assigned to work with LFIs GH and the women-led MSMEs and FBAs. Among their duties will be due diligence to ensure the MSMEs are really women-owned but not some women fronting male owned MSMEs to gain access to the concessional credit; ensure that credit provided are for the CRA eligible activities that could be financed with the concessional credit. They will handle verification of the credit and ensuring that no MSME or Association exceeds the $100,000 equivalent in local currency. They will also provide financial advisory services to the women-led MSMEs and FBAs for efficiency operation of their agricultural production and agribusiness and work with them to enhance their access to GIRSAL risk-sharing services.

For the implementation of Component 1, AfDB and the selected LFIs will act together as the Executing Entities. Under this Component, both AfDB (in respect of the climate and gender-based screenings) and LFIs(in respect of credit risk screenings) will separately review and assess each loan application, in accordance with the Programme's eligibility criteria, as further developed on the basis of the Initial Criteria. Only loan applications that are positively assessed and reviewed by both Executing Entities under this Component will be approved. Therefore, AfDB and the selected LFIs will act as co-Executing Entities for the lending facility under Component 1. Once an application is approved by both AfDB and the selected LFIs as described above, the selected LFIs will enter into individual sub-loan agreements with the relevant Sub-Borrower.

For Component 2, AfDB will act as the only Executing Entity and exercise decision-making on the use of GCF Non-Reimbursable Funds, including the selection and supervision of procured parties in accordance with its own policies and procedures, and be in charge of implementing the Technical Assistance activities for the benefit of the relevant beneficiaries.

In addition, AfDB will undertake general oversight, monitoring, supervision and coordination activities related to its role as Accredited Entity in accordance with the AMA. For such purposes, AfDB will establish a programme management unit ("**PMU**") for the Programme.

Figure 12: Implementation Arrangement of the Programme (corporate logo of AfDB's Group shown for illustration only)

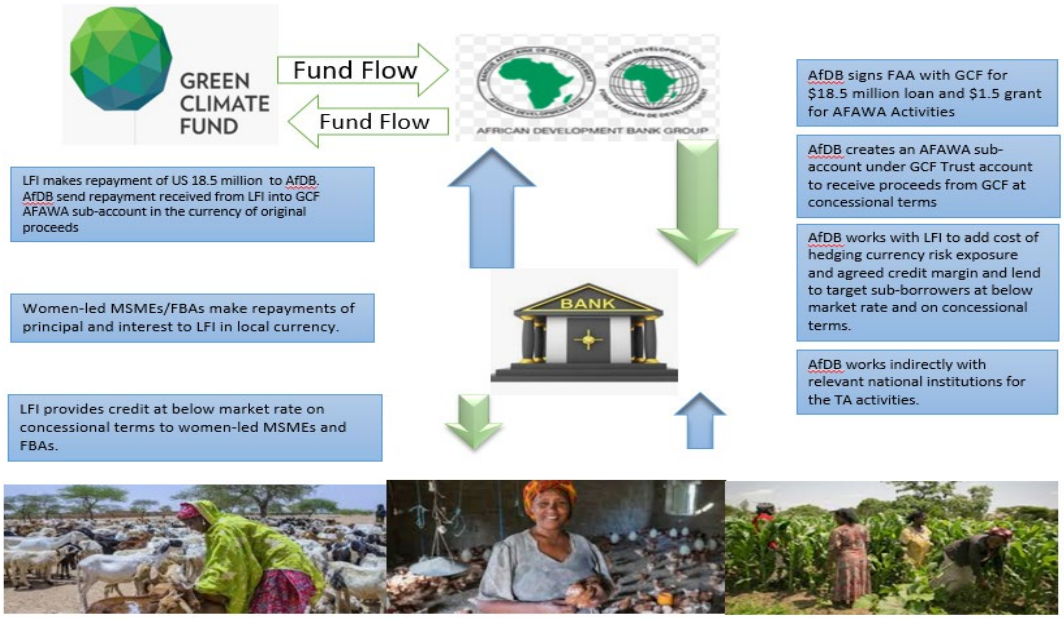


Flow of funds

The AfDB will provide the GCF proceeds to LFIs in US Dollars from the GCF. Results from scoping visit by the AfDB in Ghana indicated that the banks including LFIs don't find the lending in hard currency attractive due to the currency risks associated with making loan repayments in hard currency. The AfDB will therefore work with LFIs for a swap contract with TCX and to add the costs of hedging currency risks in the pricing of the line of credit (LOC) in local currency. AfDB is working with LFIs to provide co-financing as a way of catalyzing private investor finance, provide dedicated desk and at least 2 staff for this programme.

LFIs will add the costs of the currency hedging as implicit interest rate and a credit margin to be agreed with both AfDB and GCF in order to lend to the women-led MSMEs and FBAs at a rate below 20% for the process is shown in Figure 13.

Figure 13. Flow of Funds of the AFAWA Programme



Describe construction and supervision methodology with key contractual agreements. Describe operational arrangements with key contractual agreements following the completion of construction. If applicable, provide the credit analysis of key counterparties of key contractual agreements and/or structural mitigants to cover the counterparty risks.

The AfDB will sign the Funded Activity Agreement (FAA) with the GCF for the proceeds in US Dollars. The AfDB will create an AFAWA sub account under the GCF Account to receive the proceeds from the GCF. The AfDB will sign loan agreement with LFIs and assist with currency swap arrangements at competitive rate. LFIs will add the costs of the currency hedging and an agreed credit margin to lend to the women-led MSMEs and FBAs in local currency at a concessional rate with a longer tenor. The women-led MSMEs and FBAs will make repayments (principal and interest) to LFIs in local currency. LFIs will bear the exposure of default risks from the non-payment of loans by the women-led MSMEs and FBAs.

LFIs will make repayment of US$ 18.5 million to AfDB in US Dollars. The AfDB will deposit the repayment received from the LFIs into the GCF AFAWA sub-account for onward transfer of proceeds to the GCF in US Dollars.

For Component 2, AfDB will act as the only Executing Entity and exercise decision-making on the use of GCF Non-Reimbursable Funds, including the selection and supervision of procured parties in accordance with its own policies and procedures, and be in charge of implementing the Technical Assistance activities for the benefit of the relevant beneficiaries. AfDB will enter into service contracts with the third parties in compliance with the AfDB's procurement policy and the procurement plan for this programme.

C.8. Timetable of Project/Programme Implementation

Please provide a project/programme implementation timetable in section I (Annexes). The table below is for illustrative purposes. If the table format below is used, please refer to the activities as numbered in Section H. In the case of outputs, please mark when all the required activities will be completed.

COMPONENTS/OUTPUTS	2019	2020				2021				2022				2023				2024		
	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
Component 1: Line of Credit for Women-owned Businesses in Climate Resilient Agricultural Activities																				
Output 1.1: Enhanced access to credit facilities for women-led MSMEs and FBAs for implementing CRA practices																				
Activity 1.1.1: Loan disbursement to 400 eligible women-led MSMEs and FBAs for CRA practices																				
Component 2: Technical Assistance for Development of Climate Resilience Agricultural Value Chain																				
Sub-component 2.1: Capacity building for CRA adoption practices and technology uptake																				
Output 2.1: 400 women-led MSMEs and FBAs trained in the adoption of CRA practices and technology uptake																				
Activity 2.1.1CRA capacity building and training workshops																				
Sub-component 2.2: Technical Assistance for LFIs and MSMEs/FBAs to support implementation of programme:																				
Output 2.2: 20 LFIsstaff and 400 women-led MSMEs and FBAs trained with knowledge and skills for implementing CRA activities and technologies																				
Activity 2.2.1: Training support for LFIs& MSMEs/FBAs for programme implementation																				
Sub-component 2.3: Technical Assistance for strengthening the regulatory framework for private sector investment in climate resilient agriculture																				
Output 2.3: 250 policy makers and 250 private sector investors trained with knowledge and skills to 'crowd in' additional private sector investment intoCRA practices and technology adoption																				
Activity 2.3.1:TA support for institutional reforms targeted at 'crowding in' private sector investment into CRA practices and technology adoption																				
Sub-component 2.4: Advocacy, knowledge Management and Outputs Dissemination																				
Output 2.4: More than 5 dissemination events completed; publications and promotional materials are disseminated to support climate change policy and negotiations																				
Activity 2.4.1: Advocacy and knowledge dissemination events																				
Component 3: Programme Management																				

D.1.Value Added for GCF Involvement

With financing from the GCF, the Program will have a major transformational impact on several fronts. Firstly, it will promote financing to climate sensitive activities which tend to be generally overlooked due to perceived risks or attract unfavorable financing terms. It will also strengthen the role played by women and women owned business in agricultural value chains especially food production, value addition processing and non-traditional exports. It will encourage women participation in industrialization. Increased output and productivity in climate resilient projects in the agricultural will also directly contribute to food security and, in addition to promoting exports, lead to substantial foreign exchange savings from import substitution; this is particularly pertinent considering the population growth rate which is twice the global average. In addition to the aforementioned, initiatives such as these will create jobs and formalization of for youth ultimately promoting economic stability and reducing rural urban migration pressures as well as a tidal wave of irregular migration from sub-Saharan Africa to other parts of the world.

This joint action is a clear demonstration of the commitment both AfDB and GCF has towards enhancing women economic participation to achieve SDGs given that micro and small enterprise sector particularly the agriculture sector that employs at least 45% of women in Ghana is highly dominated by women who contribute to almost half of productive output. This is especially so because this category of vulnerable population typically lack access to reliable sources of electricity and the capital to buy efficient, modern processing equipment, resulting in high levels of waste in processing and low quality and nutritional value. Most women owned businesses are also too small to qualify for financial assistance from the government or loans from bank, or they are unaware that these resources exist.

The AfDB's twin objective and achievements of the SDGs is anchored on the Bank's strategy to work with development partners, development finance institutions and banks to leverage $3 billion in financing for women owned businesses, supporting SME development across the continent while deploying a series of financing instruments, including guarantee facilities to de-risk lending to women, at scale, build capacity of banks and financial institutions to lend to women. The contributions from the GCF align well with the Bank's commitment to promote gender equality as enshrined in the Gender Strategy 2014-2018 and respective action plan. In addition, the African Development Bank's **Affirmative Finance Action for Women in Africa** ("AFAWA") initiative with an overarching objective of addressing, in a holistic manner, the access to finance challenges faced by women in business, specifically women entrepreneurs, through the mobilization of financial and other non-financial resources. It is therefore an innovative programme as it is the first ever AFAWA programme meeting all the key objectives of gender financing.

GCF concessional loans will be used to provide affordable loans in local currency to on-lend to women-led MSMEs/FBAs involved in climate resilient agricultural practices. Up to USD 1.5Million of the GCF budget will be grant financing to support

- Activities related to capacity building/strengthening targeting MSMEs particularly owned or led by women,
- Activities related to capacity building/strengthening for about 20 relevant LFIs staff for expertise in gender and climate finance. This will be of great value to LFIs in helping to shore up its capacity for implementing GCF funded activity after the accreditation.
- Programme Management activities including identifying investment opportunities and pipelines within various commodity value chains; facilitating linkages between government ministries and private sector projects; overseeing project preparation and investment proposal development and investment facilitation

The programme will provide best practices and lessons for banks and borrowers alike to reconsider climate resilient agricultural measures, and conservation of the environment. Climate rationale and positive externalities from the climate resilient measures underlie the concessionality of resources. LFIs, as the co-Executing Entity to Component 1 of this GCF programme, will apply the climate change and gender lenses in its practices for climate resilient agricultural lending. Detailed procedures will be outlined in the Operations Manual to be completed before the programme implementation.

The incremental costs for implementing the resilient measures also addresses potential market distortions by the use

of concessional resources. This presents some justification for using concessional resources to catalyze private sector investments for activities that enhances resilience of ecosystems, communities and livelihoods of especially vulnerable groups confronted with high climate risks and uncertainties in the agricultural sector.

This initiative is a pilot and precursor for similar programs to be replicated in future. Overall, the African Development Bank estimates the total program cost for AFAWA is estimated to be circa USD1.5 billion and for this initial pilot in Ghana, a sum of USD 20 million will be deployed as lines of credit and direct lending to eligible projects while equity may be considered in a few cases where there is an overriding justification to do so.

Based on foreseeable revenues from facility repayments through FI's the program is expected to have a return on investment (NPV) of 20-25%. There will also be significant environmental and social benefits such as emission reduction and costs associated with pollution which cannot be directly measured at this stage but could substantially increase the (social) return on investment.

D.2. Exit Strategy

Please explain how the project/programme sustainability will be ensured in the long run, after the project/programmeis implemented with support from the GCF and other sources, taking into consideration the long-term financial viability demonstrated in E.6.3.This should include a description of strategies for longer term maintenance of physical assets (if applicable).

The exit strategy for the senior debt is to ensure partnership with LFIs, a tier 1 bank that is a leader in MSME finance. It also includes measures to address credit and currency risks due to the high inflation in the country. AfDB has taken precaution to ensure that it partner a tier 1 bank considering the resent systemic events in the Ghanaian banking sector that led to the dissolution/consolidation of 5 failing banks. The AfDB will still carry out due diligence on LFIs and provide the information in a credit risk memorandum which will be shared with the GCF before the FAA execution. This will help ensure that any activities or operations of LFIs that may cause any potential credit risks will be identified and addressed in time. The arrangements for the currency swap contracts and the local currency loan product is to minimize any potential currency risks on repayments as a result of high exchange rate volatility. Measures such as advisory services for accounting and financial management by investment advisors recruited to support the target women-led MSMEs and FBAs are also intended to reduce potential risks of default.

For the climate resilient measures, the TAs - key component of this programme will impart skills, knowledge and experience for measures that will reduce vulnerability of agro ecosystems, communities and livelihood of MSMEs and FBAs to climate risks. This knowledge could be replicated across the country for the adoption of such measures even after the programme has ended.

The support for regulatory and policy environment to scale up these activities as well as gender finance will also have transformative impacts even after the programme.

In this section, the accredited entity is expected to provide a brief description of the expected performance of the proposed project/programme against each of the Fund's six investment criteria. Activity-specific sub-criteria and indicative assessment factors, which can be found in the Fund's Investment Framework, should be addressed where relevant and applicable. This section should tie into any request for concessionality made in section B.2.

E.1. Impact Potential

Potential of the project/programme to contribute to the achievement of the Fund's objectives and result areas

E.1.1.Mitigation / adaptation impact potential

The programme will enhance resilience of 400 women-led MSMEs and FBAs to climate risk by implementing activities to address the vulnerabilities of agricultural yield and value addition to climate variability. Emission reductions are expected from electricity generation (with solar power and biogas to electricity), sustainable land use (from resilient agriculture interventions).

Mitigation will involve the use of 70% of GCF funds for solar (40%) and biogas (30%) activities targeting results areas in i) Energy access and power generation. The total annual avoided emission from mitigation will be 129,295tCO_2 and avoided emissions of 3,232,377tCO_2 over the lifetime of the assets.

Adaptation will involve the use of 30% of GCF funds for climate resilient agriculture for results areas in i) Most vulnerable people and communities (Adaptation) and ii) Ecosystem and ecosystem services (agro ecosystem management), and (iii)Health and well-being for over 80,000 direct and indirect beneficiaries at the programme level.

Mitigation and Adaptation activities will have cross cutting effects particularly on results areas of i) Forestry and land use by the avoided annual mitigation of 2,211tCO2and lifetime emission of 55,282.4tCO_2. As indicated in Table C.2.2, over 98% of household cooking in the target agro ecological zone is from biomass based energy such as charcoal and firewood that contributes to deforestation and significant emission of carbon in the zone. The use of the renewable energy system will generate great benefits for this result area.

The total emission reduction is forecasted to reach 1,939,426tons of CO_2 in 15 years of the loan tenor and, 3,232,377tons of CO_2 in 25 years (or the lifetime of the assets) (see Table E.1.2). This is not taking into consideration the avoided emissions from the use of biomass based energy (such as woodfuel and charcoal) as result of the switch to renewable energy.

Table E.1.1: Programme Impacts alignment with GCF and Funds Flow

GCF Funds Allocation by Impact Areas	Mitigation Impact Area	Adaptation Impact Area
% Allocation of Program Budget	70%	30%
Total Funds Allocation by Impact Areas		
% Allocation of Program Budget	66%	34%

LFIs have great constraints for medium to long term finance due to high dependence on short term deposits and other regulatory constraints such as BASEL III requirements. The co-financing amount will therefore be used to fill the gap for working capital financing for farming loans involving land clearance, seeds and other activities that will be relevant for the CRA. Due to the short term nature of the co-financing, it will not finance capital expenditure for medium to long-term assets such as solar and biogas.

Detailed calculation methodology is provided in section E.1.2.

E.1.2.Key impact potential indicator

<table>
<tr><td colspan="4">Provide specific numerical values for the indicators below.</td></tr>
<tr><td rowspan="4">GCF core indicators</td><td rowspan="2">Expected tonnes of carbon dioxide equivalent (t CO_2 eq) to be reduced or avoided (Mitigation only)</td><td>Annual</td><td>129,295t CO_2 eq</td></tr>
<tr><td>Lifetime</td><td>3.2Mt CO_2 eq</td></tr>
<tr><td rowspan="2">Expected total number of direct and indirect beneficiaries, disaggregated by gender (reduced vulnerability or increased resilience);
Number of beneficiaries relative to total population, disaggregated by gender (adaptation only) include:</td><td>Total</td><td>Direct and Indirect Beneficiaries of 373, 720

Direct Female Beneficiaries: 50,800

Indirect Male Beneficiaries:33,600

Indirect Beneficiaries: LFIs 20 staff

External Indirect Beneficiaries 289,300</td></tr>
<tr><td>Percentage (%)</td><td>NA</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td>Other relevant indicators</td><td colspan="3">Examples
Expected increase in the number of households with access to low-emission energy
Expected increase in the number of small, medium and large low-emission power suppliers, and installed effective capacity
Expected increase in generation and use of climate information in decision-making
Expected strengthening of adaptive capacity and reduced exposure to climate risks
Others</td></tr>
</table>

Describe the detailed methodology used for calculating the indicators above.

GHG Calculation Methodology

Details of the calculations are presented in the project financing models. The time horizon for the model is from 2019-2035. The models cover 1. Financial and equivalent carbon emission reduction from the climate resilient agricultural activities; 2. Financial and equivalent carbon emission reduction from the use of solar systems to replace diesel and 3. Financial and equivalent carbon emission reduction from (i) conversion of methane to biogas and (ii) use of biogas to replace diesel.

There are additional positive externalities from the improved processing and the use of low-carbon technologies for other value chain activities such as packaging. The programme will also promote replacement of technologies such as diesel based generators, tractors and combine harvesters with biogas based generators, tractors and combine harvesters for reducing emissions in the agriculture value chain.However, these are not modeled due to lack of reliable data in the area to support the analyses.

Table E.1.2. Avoided Carbon Emission from Major Activities of the Program.

(i) Avoided emission from the use of renewable energy								
Technologies	Ton CO2 per KWh	Total capacity (KW)	Annual		15 years		25 years	
			Generation (kWh)	Emissions (Ton CO2)	Generation (kWh)	Emissions (Ton CO2)	Generation (kWh)	Emissions (Ton CO2)
Solar PV		7,400	11,214,552		168,218,280		**280,363,800**	
vs Diesel	0.00064			7,177		107,659.7		**179,432.83**
Biogas (6106 m^3) biodigester			22,307,993	105,629	334,619,889	**1,584,440**	557,699,816	**2,640,734**
Biogas replacement of diesel	0.00064	2,546.57	22,307,993	14,277	334,619,889	**214,156.73**	557,699,816	**356,927.88**
(ii) Avoided emission from climate resilient agricultural practices								
Resilient agriculture	Emissions per ha	Total ha	Annual Emissions (Ton CO2)		15 years (Ton CO2)		25 years (Ton CO2)	
	1.292	1,712	2,211		33,169.5		55,282.4	
(iii) Total expected avoided emission ((i)+(ii))								
Total low-emission climate resilient practices			Annual Emissions (Ton CO2)		15 years (Ton CO2)		25 years (Ton CO2)	
			129,295		1,939,426		3,232,377	

1. Climate Resilient Agricultural Activities.

Emission reduction scenarios are calculated for five climate resilience agricultural activities (i.e., minimum tillage, improved agronomic practices, integrated nutrient management, improved genetic resources, mixed cropping) with eight crops. The interest rate used were 13.96%, 15.21% and 19.85% based on assumed costs of capital in Ghana Cedis based on the implicit costs of the currency hedging while the assumed cost of emission is fixed at 7 US$/ton based on USAID (2017).

Specifically, to assess the potential impact of the support provided by the GCF to the implementation of climate resilient agriculture interventions, the following analysis were carried outbased on previous experience and existing studies:

- The programme considered a portfolio of climate resilient agriculture (CRA) interventions, for several crops. The implementation of CRA is considered for 1 hectare of each of the following crops (as well as for a scenario that

assumes 30% of the total budget being allocated to financing these climate resilient agriculture activities):
  - Cassava, Maize, Okra, Pepper, Rice, Tomatoes, Watermelon, and Beans.
- The following climate resilient agriculture (CRA) interventions have been tested:
  - (1) Crop rotation, (2) mixed cropping, (3) improved nutrient management, (4) improved genetic resources, and (5) minimum tillage.
- In the baseline scenario (without CRA), yield is assumed to decline over time due to climate change. By 2035, climate impacts will have reduced the yield of all crops by 20% compared to today.
- The programme created a project financing model to estimate the financial viability of CRA interventions. The financial viability is assessed based on the internal rate of return (IRR), net present value (NPV) and debt coverage ratio (DCR) for each of the 5 interventions. The results are based on the assumptions of the USAID (2017) study carried out for Ghana, for validation and consistency.
  - Input parameters such as yield per hectare, CRA impacts on productivity of crops and positive externalities are calibrated based on national data. Aggregated results were validated using benchmark studies, such as the specific study prepared by USAID (2017) on Ghana.
  - All parameters that are used for the calculations (including yield, market prices, and costs of each intervention) are presented in the financial models attached.
- For the financing analysis, the programme assume that farmers receive loans over 15 years (tenor).
- To assess the impact of interest payments on farmers in need, the analysis considers an interest rate of 13.96%, 15.21%, and 19.85%.
- The IRR is presented for the short term (2019-2024) and the medium term (2019-2035) to analyze the impact of long term CRA benefits on the financial viability of CSA projects.

The emission reduction potential is estimated for each CRA, and then multiplied by the total amount of hectares (1,712 ha) that could be supported with the allocated funding. Emission reduction by land management practice were estimated using two main sources: a USAID (2017[33]) study for Ghana providing details on the management practices and their economic performance, plus an indication of the value of carbon sequestration from all interventions of 1.292 tons/ha per year. A second study was used for validation, authored by Smith et al. (2008[34]) that provides "Per-area annual mitigation potentials for each climate region for non-livestock mitigation options". The programme used the result of the USAID study, which are consistent with the paper by Smith et al.: crop rotation (0.357 tons of CO2/ha/year), mixed cropping (1.429 tons of CO2/ha/year), improved nutrient management (3.194 tons of CO2/ha/year), improved genetic resources (0.357 tons of CO2/ha/year), and minimum tillage (0.357 tons of CO2/ha/year). The average value obtained is 1.292 ton/ha/year.To estimate the total amount of additional carbon sequestration the analyses divided the total investment amount by the cost per ha of each activity; this gives the total amount of hectares supported by the project; the analyses then multiplied the total amount of hectares by the additional carbon sequestration per hectare.

2. Use of Solar Energy Systems.

Based on the assumption of allocating 40% ($7.4 million) of the $18.5 million loan product for solar energy systems and a benchmark figure of $1 million/1MW of solar system, the estimated installed capacity for the off grid solar is 7.4 MW. With annual generation of 1515.5 kWh/kW the expected annual generation from the installed capacity of the solar system will be 11,214,552 kWh. Although, the off-grid solar will displace the use of both diesel and biomass, since there is currently no acceptable GCF methodology for calculating emission factor of biomass systems such as firewood and charcoal, the programme used diesel emission factor of 0.00064 tCO_2/ kWh. The annual emission reduction from the diesel replacement by the solar systems will be 7,177 tCO_2 and 179,432.83 tCO_2 over the 25 years lifetime of the installations.

[33]USAID . (2017). Cost and benefit analysis for Climate-Smart Agricultural (CSA) practices in the coastal Savannah Agro-Ecological Zone (AEZ) of Ghana. USAID in´collaboratiuon with CIGAR, CIAT and CCAFS

[34]Smith et al. (2008). Greenhouse gas mitigation in agriculture. Philos Trans R SocLond B Biol Sci. 2008 Feb 27; 363(1492): 789–813

To allow for easy comparison, a capacity of 1 kW is considered in the financial model. The financial assessment was carried out using an interest rate of 13.96%, 15.21%, and 19.85%. Emission reduction in this case is based on the emissions generated per kWh of electricity produced. Net savings are estimated as the difference between the emissions generated from electricity generated from diesel and the replacement by solar system.

3. Use of Biogas Energy Systems.

The annual availability of feedstock from cattle, sheep, goats, swine/pigs, chicken, and fish/aquaculture was estimated based on the assumption of 0.05% of the population in the area and bio-methane yield and suitability for anaerobic digestion for each of the sources. For human waste/sewage the estimation in the model was based on average discharge per day of just 30% of the target direct beneficiaries. Food and agro waste were estimated based on 10% of average daily meal intake and 10% of post-harvest losses respectively. The annual biogas generation (m_3/yr) was estimated as 11,589,065 m_3/yr and using the methane concentration and conversion factor for each of the feedstock an estimated annual methane availability of 7,085,651 m_3/yr. Using conversion methodologies (including mass rates) consistent with IPPC and CDM methodologies, the annual net CO_2equivalent emission avoided by utilization this amount of biogas was estimated as 105,629.35 tCO_2eq.This is the emission reduction from avoiding the discharge of the methane from the waste that hasglobal warming potential (GWP) over 100 years period of 25 times that of CO_2according to the Fourth Assessment Report (FAR) of the IPCC. The net emission avoidance over the 15 years period is 1,584,440 tCO_2eq and2,640,734 tCO_2eq over 25 years lifetime.

The biogas that will be produced from the digesters will also have to be used. Biogas has several decentralized and diversified uses such as for cooking, cooling, lighting and transportation. For simplicity and conservative assumptions of the estimation, the programme assumed that the biogas will be used to replace diesel for genset generation. With an annual generation of 22,307,993 kWh and diesel emission factor of 0.00064 tCO_2/ kWh, the annual emission reduction from the diesel replacement is 14,277 tCO_2 and 356,927.88 tCO_2 over the 25 years lifetime of the digester.

Table E.1.3. The Number of Direct and Indirect Beneficiaries

Programme Level Beneficiaries (Direct Beneficiaries)	**Total**
Number of Women-led MSMEs/FBAs	400.0
60% of MSMEs employees are women (minimum firm size of 40 employees)	4,800.0
60% of FBAs members are women (minimum association size of 30 members)	3,600.0
Total Programme Level Direct Female Beneficiaries at Firm's Level	**8,800.0**
At the Female Headed Household level (Ave. Household Size of 5 Members)	
Direct MSMEs beneficiaries at female headed household level	24,000.0
Direct FBAs beneficiaries at the female headed household level	18,000.0
Total Direct Beneficiaries at the Female Employee Headed Household Level	***42,000.0***
Total Programme Direct Beneficiaries (Firm and Female Employee Household Levels)	**50,800.0**
Indirect Beneficiaries (Males)	
40% of MSMEs employees are males	3,200.0
40% of FBAs members are males	2,400.0
Total Programme Level Indirect Male Beneficiaries at Firm's Level	**5,600.0**
At the Male Employee Household level (Ave. Household Size of 5 Persons)	
Indirect MSMEs beneficiaries at male headed household level	16,000.0
Indirect FBAs beneficiaries at the household level	12,000.0
Total Programme Level Indirect Beneficiaries at Male Employee Household Level	**28,000.0**
Total Indirect Male Beneficiaries (Firm and Household Levels)	***33,600.0***

Total Indirect LFIs Staff Trained	***20.0***
Grand Total (Direct + Indirect Beneficiaries at the Programme Level)	**84,420.0**
External Female Indirect Beneficiaries (equipment and inputs. Assuming about 25 companies with average employees of 20)	**500.0**
External Male Indirect Beneficiaries (equipment and inputs. Assuming about 25 companies with average employees of 20)	**500.0**
Female Customers of the target MSMEs/FBAs (that will benefit from improved processed and packaged products- assuming 0.6% of the 28.83 Ghanaian population of 2017.	**172,980.0**
Male Customers of the target MSMEs/FBAs (that will benefit from improved processed and packaged products- assuming 0.4% of the 28.83 Ghanaian population of 2017.	**115,320.0**
Total External Beneficiaries	289,300.0
Grand Total (Direct + Indirect Beneficiaries at the Programme Level and External)	**373,720.0**
Total Female Beneficiaries	**224,280.0**
Total Male Beneficiaries	***149,420.0***
Total Firm Beneficiaries	***20.0***

E.2. Paradigm Shift Potential

Degree to which the proposed activity can catalyze impact beyond a one-off project/programme investment

E.2.1. Potential for scaling up and replication (Provide a numerical multiple and supporting rationale)

The AfDB total program cost in climate change adaptation and mitigation is estimated to be over USD1.5 billion. This initiative is a pilot and precursor for similar programs to be replicated in the future. The benefits of the program will be amplified by the Ghana Incentive Based Risk Sharing Facility for Agricultural Finance (GIRSAL), which is expected to underwrite some of the projects financed on either a pro rata or first loss basis. If successful, this may also change attitude of banks and investors in Ghana towards agriculture and revolutionize financing for agriculture in the country. The Ministry of Finance and the Central Bank of Ghana will play a critical role in supporting government effort to shift or direct additional private resources to climate compatible development (CCD), and enhance understanding of the links between public incentives and private investment in CCD.

Equally, providing women with access to finance has great potentials for ending poverty in all forms (SDG1), empowering women and ending hunger for their children (SDG2), ensuring good health and family wellbeing as well as giving them the opportunity to provide good quality education for their children (SDGs 3,4), promoting gender equality and women empowerment (SDG 5,8) as well as reducing the income disparity between men and women (SDG 10). These are some of the long term impacts the programme will bring to the target communities in Ghana.

Furthermore, in order to contribute to the long-term sustainability of the women-led agribusiness enterprises, FBAs and LFIS GH, the programme in structured in such a way that part of the activities will be dedicated to providing Technical Assistance to specific initiatives that contribute to long-term impact. Examples of these initiatives include supporting LFIS GH with training to enhance the capacity of about 20 staff for gender and climate finance Other areas of technical assistance will include training on climate resilient agriculture especially on critical decision like which crops to grow when, how to diversify into new crops/livestock to improve climate resilience.

E.2.2. Potential for knowledge and learning

Describe how the project/programme contributes to the creation or strengthening of knowledge, collective learning processes, or institutions.

Supporting MSMEs particularly women owned and led is imperative to stakeholders such as government, large corporations, financiers and women themselves. However, there is still lack of information on the correct parameters for MSME financing especially in a green economy. The programme is a collaborative framework between partners, government and private sector operators. Thus, it will naturally enable not only the AfDB, but key stakeholders such as the financial intermediaries to work with government and private sector to build on the knowledge gained during programme implementation to enable low risk financing of the MSME.

Also, during programme implementation, information/knowledge will be captured on: (i) improved production, (ii) strengthened resilience of production systems to climate change and other agricultural risks; (iii) reduced emissions of GHGs per unit of product; and (iv) access to finance for women farmers and agribusiness entrepreneurs on climate smart related investment. The objective would be to build up a reasonable case in order to replicate the action in other countries particularly Uganda, Liberia, where Risk Sharing Facilities are being designed.

Additional information including:

- Intra-organizational frameworks for public and private sector buyers that that are conducive for MSMEs, support such as relationships between finance, operations and procurement;
- Inter-organizational frameworks that are conducive for MSME support such as contract parameters
- MSME-side factors such as financial and technical competency
- Regulatory factors

The programme provides a platform for peer learning, exchanges of best practices and replication of successful programs. MSMEs can be educated on key aspects to look out for in contracts and financial terms while MSMEs with higher performance will be teamed with incubation programs for support through the AAIN model. As such a sound database of MSMEs and their track records of performance will be established and any lessons learnt, success stories and other relevant information will provide content to the innovative networking platform called '50 Million Women Speak (50MWS)', which is being developed in collaboration three RECs, namely, COMESA covering East and Southern Africa, EAC covering East Africa, and ECOWAS covering West Africa. The target is women entrepreneurs in Africa, who often struggle to access information on financial and non-financial services, and who also are less likely to have established business networks or mentors that can offer them much-needed advice and guidance on how to grow their businesses. The objective is to facilitate new business ventures, and create features, that will bring a whole range of important benefits to the digital economy and women and youth in particular and facilitate efficiency gains, while acting as a magnet for data-driven innovation in various sectors including climate smart agriculture value chain.

Therefore, information and data gathered through this programme will provide valuable content to the platform and women's economic participation. Specifically, the platform will improve the ability of women entrepreneurs to network and share information and knowledge on key climate change topics for a collaborative and inclusive economy.

In recognition of the need to ensure sustainability, scalability and impact, a specific component of the programme will be directed to public institutions (government entities, central banks, regulatory bodies, as well as other relevant stakeholders), to address legal and regulatory barriers to improve the enabling environment for access to finance for women's businesses. Under this Business Enabling Environment component, the programme will assist them to improve gender mainstreaming in relevant policies and to influence the channeling of funding towards women in business. The presence of gender sensitive policies, gender mainstreaming of programs and the establishment of an enabling legal and regulatory frameworks will support improved business enabling environment and access to financing for women in business.

E.2.3. Contribution to the creation of an enabling environment

Describe how proposed measures will create conditions that are conducive to effective and sustained participation of private and public sector actors in low-carbon and/or resilient development that go beyond the program.

The programme is a bold effort to significantly empower and leverage finance for women in Africa. As a pan-African platform, AFAWA will work with development partners, development finance institutions including banks on the African continent to leverage US$3 billion in financing for women owned businesses, supporting MSME development across the continent. In line with the AFAWA model, projects such as the current initiative are being conceptualized to support women economic empowerment and entrepreneurship. Under this initiative, we will identify financing instruments, design technical assistance, establish dialogue and knowledge management processes and practices and Identify investment opportunities within various commodity value chains i.e. cotton, cocoa, cassava, rice, maize and soya. The AfDB will also facilitate linkages with government and will partner LFIs to develop a local currency loan product to complement GIRSAL instruments such as the credit guarantee and agricultural insurance for women-led MSMEs and FBAs involved in climate resilient agricultural practices.

The programme is a good case of private sector involvement in financing climate resilient measures. LFIs is a private financial institution and the MSMEs and FBAs are also private sector entities. The programme has great potential for replication on the continent even in the absence of a risk sharing instrument such as GIRSAL.

E.2.4. Contribution to regulatory framework and policies

Describe how the project/programme strengthens the national / local regulatory or legal frameworks to systematically drive investment in low-emission technologies or activities, promote development of additional low-emission policies, and/or improve climate-responsive planning and development.

The legal and regulatory framework for attracting private sector investment into agriculture in Ghana is still very weak. Access to key agricultural inputs such as drought resistant and high yielding seeds, fertilizer, agricultural machineries, credit, packaging and processing equipment, markets, transport and information and communication technologies are still lacking.

The programme will implement TAs for legal and regulatory support that will help mobilize private sector investment for climate resilient agriculture in the country. The regulatory support and reforms will help improve the quality and efficiency of regulatory systems that govern access to key agricultural factors such as drought resistant seeds, organic fertilizers and bio-slurry from bio-digesters, solar irrigation, off-grid solar for processing and storage, machinery, finance, markets, transport and information and communication technologies. The TA activities are designed to help strengthen the regulatory framework for private sector investment in climate resilient agriculture to facilitate the implementation of activities in the agricultural sector that will contribute to meeting the Ghana's NDC targets

E.3. Sustainable Development Potential

Wider benefits and priorities

E.3.1. Environmental, social and economic co-benefits, including gender-sensitive development impact

Project to considerably focus on the northern of the country remains considerably poorer than the south, with limited infrastructure and investment, including public facilities with a higher reliance on agriculture, albeit with weaker access to markets.

Economic co-benefits:

- Poverty alleviation for women through greater access to finance.
- Job creation for women that empowers them and increase their participation in household decision making.
- Greater participation of women in shared growth.
- Reduction in income inequality among men and women.
- Skills acquisition and transformation for women in agribusiness ventures lending to decent working environment for all.
- Value addition to the agricultural value chain
- Food security through climate resilient agricultural practices.

Social co-benefits:

- Promotion of gender equality
- Improvement in health, education and wellbeing of children because of women empowerment.
- Reduction in rural/urban migration because of improved income status of the household
- Prevention of early marriages for girls due to greater access to finances.
- Improvement in women social capital hence, their ability to save and grow their businesses.

Environmental co-benefits

The table below indicates potential environmental co-benefits to be derived (dollar values) from the programme when climate smart agricultural practices are adopted.

- Reduction in per hectare soil erosion of about $85.2
- Increase in biodiversity of about $70.2
- Improvement in air quality valued at $44.9
- Increased soil biodiversity to the tune of $81.6
- Improvement in water availability valued at $110

Table E.3.1 Environmental co-benefits

List of positive externalities for various interventions							
	Reduction in soil erosion	**Increase in biodiversity**	**Improvement in air quality**	**Increased soil biodiversity**	**Improvement in water availability**	**Improved social capital**	**Improved pol capital**
Minimum tillage	$ 21.90	$ 10.60	$ 2.50	$ 25.00	$ 37.50	$ 12.00	$ 15.80
Improved agronomic practices, *e.g. crop rotation*	$ 8.70	$ 7.80	$ 2.50	$ 17.80	$ 11.30	$ 13.10	$ 16.30
Integrated nutrient management, *e.g. efficient fertilizer application, split application, timing*	$ 16.30	$ 29.30	$ 27.40	$ 9.80	$ 27.50	$ 19.90	$ 15.50
Improved genetic resources, *e.g. hybrid seeds to improve yield without changing production practices*	$ 4.50	$ 7.50	$ 2.50	$ 5.00	$ 5.00	$ 0.00	$ 0.00
Mixed cropping to make efficient use of inputs	$ 33.80	$ 15.00	$ 10.00	$ 24.00	$ 28.80	$ 14.00	$ 12.00

Table 4: Summary of positive externalities obtained from selected CSA management practices (USAID , 2017).

Gender-sensitive development impact:

The entire programme focuses on women

E.4. Needs of the Recipient

Vulnerability and financing needs of the beneficiary country and population

E.4.1. Vulnerability of country and beneficiary groups (Adaptation only)

Agriculture is the main source of livelihood to more than 50% of the population in Ghana. Unfortunately, it is predominantly rain-fed and highly susceptible to climate change and its variabilities, which is likely to greatly impact productivity. Current projections on the impacts of 1.5°C and 2.0°C global warming scenarios on cereal yields (Faye *et al*., 2018) and on consecutive dry and wet days over West Africa (Klutse*et al*., 2018), suggest significant negative consequences. For these reasons, investments in agriculture in Ghana as most other West African nations are increasingly risky and expensive.

The Government programme on **Planting for Food and Jobs (PFJ) Campaign** encourages the use climate resilience agricultural practices, innovative soil and water conservation technologies, resource recovery reuse solutions, afforestation and reforestation programs among many other interventions to mitigate the adverse impacts of climate change. On the other hand, GIRSAL is premised on the assumption that mobilizing private sector financing for agriculture will be critical to the success of agricultural transformation in Ghana. Women have a key role to play in this process through greater access to finance.

Thus, the country's priority needs for agriculture are to promote climate resilience agricultural practices as well as mobilizing resources to fund adaption needs. This programme combines both approaches and the lessons learnt during implementation will play a catalytic role in transforming the entire agricultural value chain in Ghana.

E.4.2. Financial, economic, social and institutional needs

Describe how the project/programme addresses the following needs:

- *Economic and social development level of the country and the affected population*
- *Absence of alternative sources of financing (e.g. fiscal or balance of payment gap that prevents from addressing the needs of the country; and lack of depth and history in the local capital market)*
- *Need for strengthening institutions and implementation capacity.*

Economic

Although agriculture has declined to around 20% in terms of its contribution to GDP in Ghana in the recent years, it remains a vital part of the economy in relation to crop production and employment. It is an important sector in the Ghanaian economy, employing around 45% of the country's workforce. According to the Ministry of Food and Agriculture (MoFA), agriculture is key to overall economic growth and development in Ghana and is expected to lead the growth and structural transformation of the economy and maximize the benefits of accelerated growth'. Despite the size of the agricultural sector, Ghana is a net importer of several key agricultural products, such as rice, wheat, sugar and poultry (FAO, 2015). Small-scale producers, with average farm size of about 1.2 hectares, dominate Ghana's agriculture sector. Relatively basic technology is used and hence leads to low crop yields (FAO, 2015). Smallholder farmers account for about 80% of domestic production and the farming population is aging, as young people migrate away from farms to urban areas. Production in Ghana is also hampered by low soil fertility, low levels of fertilizer use, reliance on rain-fed agriculture sub-optimal crop varieties, limited information and access to markets, and low animal productivity. This initiative will address these challenges by promoting financing to climate sensitive activities which tend to be generally overlooked due to perceived risks or attract unfavorable financing terms.

Ghana graduated to lower middle-income country (MIC) status in 2010. The shift was achieved earlier than expected: in part through a technical statistical adjustment in 2011. Although recent economic growth has been driven by service-oriented sectors and industry, the Ghanaian economy is heavily reliant on export commodities, in particular gold and cocoa. Ghana's economy has been affected by the discovery of coastal oil from near the Western Region since 2011 when production commenced. The Petroleum Revenue Management Act (2011) has guaranteed that payments by oil companies and details of government use of its share of royalties are made public. It allows for 30% of receipts to be set aside for savings; disposal of the remaining 70% is down to the Ministry of Finance, which is charged with choosing four priority sectors for development every three years (Hicks, 2014). The expected infrastructure and wider development impacts from oil production and revenues are perceived to have been slow to manifest. Therefore, a shift to agriculture is key to overall economic growth and development in Ghana and is expected to lead the growth and structural transformation of the economy and maximize the benefits of accelerated growth to match up to other countries on the continent such as South Africa and Kenya. To accelerate this push, the government has set up agricultural mechanization centers to provide services to farmers, under the Agricultural Mechanization Services Centre (AMSEC) Programme.

A steadydecline in Ghana's GDP growth to 4.2% in 2014 (World Bank, 2015) has resulted from fluctuations in international markets and the dominance of oil in contributing to the high GDP. However, growing inflation and a weakening currency have slowed growth alongside the more recent slump in oil prices, which has increased government borrowing from the domestic market. Falling growth rates have further been amplified due to a severe energy crisis and unsustainable domestic and external debt burdens (Okudzeto et al., 2015). The Ghanaian economy was expected to slow down to an estimated 3.9% growth rate in 2015. This initiative strongly aligns with Ghana's sustainable banking initiative being championed by the (Central) Bank of Ghana and also supports ongoing efforts by the Ghanaian government to increase financing for agriculture from a meager 3.9% of credit to the private sector to at least 10% over the next 3 years particularly because agriculture has declined to around 20% in terms of its contribution to GDP.

Social

Despite Ghana's medium ranking on the Human Development Index (135 out of 187), development has not been equal geographically. The north of the country remains considerably poorer than the south, with limited infrastructure and investment, including public facilities with a higher reliance on agriculture, albeit with weaker access to markets. The southern regions of the country, Greater Accra, Western, Eastern, Central, Volta and Ashanti, are the most developed, accounting for the largest proportion of national economic activity and home to over75% of the country's population (Okudzeto et al., 2015).

Financial

Ghana has attracted significant interest from international public donors, who have sought to support national development through Official Development Assistance (ODA), and has been one of the most successful examples in the West African region, halving extreme poverty from 36.5% to 18.2% between 1991 and2006 (FAO, 2015). Ghana's GDP in 2014 was $38.65billion (World Bank, 2015), while dispersed ODA in2013 was $1.6 billion (OECD, 2015). This means that ODA represents around 24% of total GDP and has predominantly financed debt relief action, as well as supporting government and civil society and financing developments in the transport and agriculture sectors. Ghana was ranked 114 (out of 189) by the World BankDoing Business 2016 report, performing well on access to credit and property registration, less successfully on issues relating to resolving insolvency and trading across borders(see figure 3).

Consistent with other countries in sub-Saharan Africa, the most significant sources of agriculture finance in Ghana are FDI (private investment) (averaging $124 million annually) and international public finance mainly through ODA (averaging around $100 million annually). While ODA has historically provided high levels of investment in agriculture in Ghana, the annual contributions have fallen in recent years, almost halving since a peak of $220 million in 2011 (see Section 5.2). Ghana also has an objective to ramp up both the national budget for agriculture and wider climate compatible investment (public and private). To that end, the GoG has committed to allocate and spend at least 10% of the national budget on agriculture. It has also outlined that Ghana will need to mobilize $22.6 billion in 40 ODI Working paper Mapping current incentives and investment in Ghana's agriculture sector 41 international and domestic support for the mitigation and adaptation pledges included in the country's (I)NDC under the UNFCCC between 2020 and 2030. Agriculture and food security concerns sit within Ghana's National Climate Change Adaptation Strategy and within the adaptation component of the (I) NDC. As part of the (I) NDC commitment, at least $320 million annually is expected to be spent on climate resilient agriculture, 9 and an additional $207 million annually, is expected to be spent on reducing emissions in the cocoa production sector between 2020 and 2030. Although the proportion expected to be financed by the private sector is not specified, 14 % of finance overall is expected to come from the domestic private sector and 17% from international private capital investment (see section 2.3). If Ghana is to meet the (I) NDC financial investment requirements for climate resilient agriculture, the country can either seek to mobilize at least $527 million annually in new climate compatible investment from public and private sources or look in part to green or 'mainstream' climate objectives within the existing finance flowing to agriculture identified in this study (through FDI, ODA, national budget, OOF and Climate Finance which already averages US$270 million annually). Regardless of whether Ghana focuses on mobilizing new climate compatible investment or seeks to 'mainstream' climate into existing flows, the private sector will continue to play a key role and there are several opportunities to incentivize climate compatible private investment.

E.5. Country Ownership

Beneficiary country (ies) ownership of, and capacity to implement, a funded project or programme

E.5.1. Existence of a national climate strategy and coherence with existing plans and policies, including NAMAs, NAPAs and NAPs

Please describe how the project/programme contributes to country's identified priorities for low-emission and climate-resilient development, and the degree to which the activity is supported by a country's enabling policy and institutional framework or includes policy or institutional changes.

Apart from over 129,295 tCO_2 that this programme will reduced every year to meeting the Ghana NDCs and enhancing resilience of over 373,720.0 people to deal with climate risks, the programme will also contribute to:

- Livelihood Improvements for the most vulnerable groups of people (women);
- Building and strengthening the capacity of the most vulnerable group in the society;
- Increasing agricultural productivity of the most vulnerable groups;
- Fostering climate resilience agricultural practices;
- Promoting private sector mainstreaming of climate change into their corporate strategies;
- Promoting the use of early warning platforms for farmers through agricultural insurance forecasting;
- Promoting the use of formal social security mechanisms such as weather index-based crop insurance facilities;
- Enhancing women access to climate finance through credit facilities;
- Promoting shared growth by empowering women;
- Creating of green jobs for women;
- Encouraging the growth of women-led agribusiness enterprises;
- Create awareness on climate change and its adaptation strategies;
- Mobilizing domestic and international resources for climate change adaptation;
- Contributing to the reduction of greenhouse gases through climate resilience agricultural practices.
- Increasing water availability for agriculture, domestic, energy and industrial purposes.
- Increasing ecosystems resilience

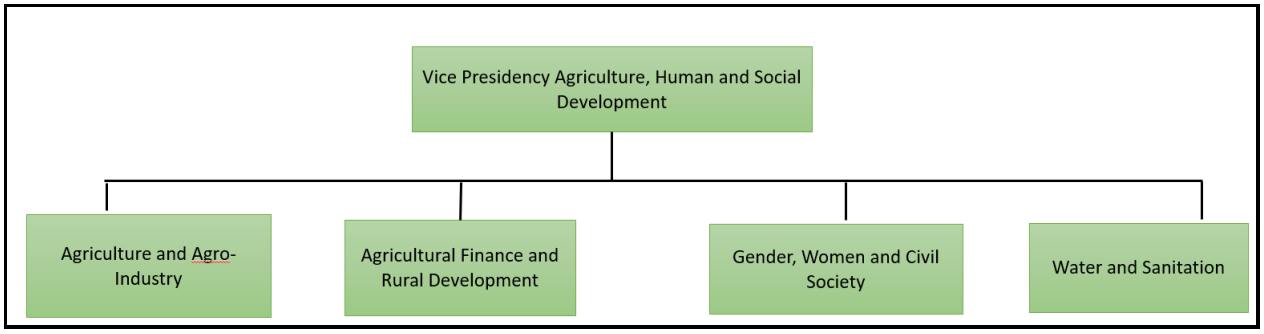
All these outcomes are in total alignment with all national policies and strategies on adaptation and mitigation in Ghana such as the **National Climate Change Policy (NCCP) 2013 and the National Climate Change Adaptation Strategy**[35]among others.

The country has already shown ownership and enabling and regulating environment for the sustainability of the programme by providing a leeway to be housed within the Central Bank of Ghana in close collaboration with the ministry of finance/GIRSAL. The GCF funds will enable the country to leverage their government efforts to achieve a lot more. All of the programme investments will have all operations within the country which serve to create employment opportunities, local institutional knowledge that can be shared within public and private sectors, strengthen local supply and distribution channels required for scaling sustainable businesses.

E.5.2. Capacity of accredited entities and executing entities to deliver

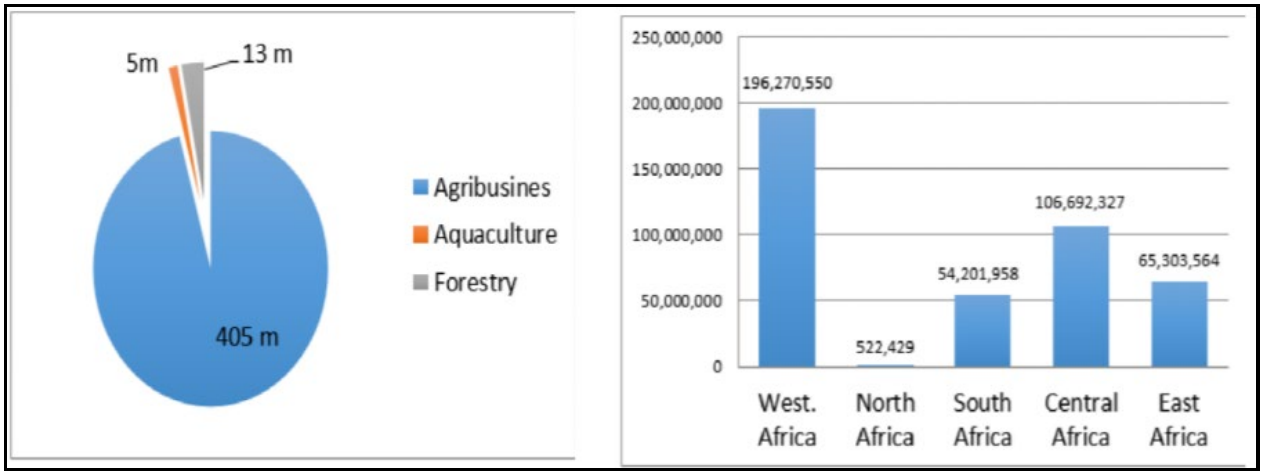
[35]National Climate Change Adaptation Strategy: UNDP

Please describe experience and track record of the accredited entity and executing entities with respect to the activities that they are expected to undertake in the proposed project/programme.



The AfDB has considerable experience in supporting African countries in developing their agricultural sector. The AfDB has long recognized that agriculture is central for the socioeconomic development of the continent which is now intertwined with the AfDB's efforts to contribute to the climate change adaptation and mitigation agenda, through measures to address climate change issues and mainstreaming positive mitigation measures in every project design and adaptation measures to selected operations, to evaluate their effectiveness, and scaling up the application of successful ones.

Between 2006 and 2014, the AfDB carried out 198 operations in agriculture and agribusiness, amounting to US$ 4.9 billion, including 181 of sovereign operations and 17 non-sovereign operations. The bulk of the sovereign projects in Agriculture (124, or approximately 69% of all projects) has been allocated to ADF-classified countries (UA3.1 billion), representing 80% of the total agricultural portfolio. A total of 25 projects (14% of the total) have been allocated to ADB-classified countries, amounting to US$496 million, 10% of the total portfolio. Blend and transition countries have received approximately US$132 million and US$298 million respectively (financing 15 projects in total), amounting to a cumulative 9% of the overall portfolio. Projects considered to be multinational (15) have received approximately US$ 300million in financing. Between 2006 and 2014, the majority of sovereign projects were concentrated in the West Africa region (67); North Africa (16); East Africa (27); South Africa (30); and Central Africa (26).



Recent Bank interventions (under the 2010-2014) have primarily focused on building infrastructure for sustainable

agricultural development, including rural roads, irrigation, storage facilities, and markets – its areas of comparative advantage. The Bank has collaborated with other specialized agencies such as the Food and Agriculture Organization (FAO), the International Fund for Agriculture Development (IFAD) and others better positioned to intervene in different parts of the value chain, such as seeds, fertilizer, and research and extension. The Bank has also made efforts to leverage funds from partnerships and trust funds to complement its traditional funding sources in order to meet the demands of its RMCs in the agriculture sector.

AfDB has also mobilized resources from global funds such as the Global Agriculture and Food Security Program (GAFSP) and climate investment funds, including the Pilot Program on Climate Resilience (PPCR) and the Forest Investment Program (FIP). While being proactive in supporting the demands of the AfDB's RMCs, the Bank has aimed to remain selective, focused, and innovative. More than 80% of the agriculture sector's approvals between 2010 and 2012 were allocated to rural and value-chain development. Given the AfDB's comparative advantage particularly successful in leveraging resources through partnerships, co-financing, and initiatives. Mainstreaming gender through the Bank's interventions in the agriculture sector was identified as a major shortfall in in this sector. This made the AfDB to come up with the AFAWA bold initiative which identified the need for better handling of gender issues in agriculture projects, beyond disaggregated indicators by gender.

AfDB support to agriculture has been predominantly from the public sector window and use of sector budget-support instruments, for example, has been limited. There is tremendous scope for the Bank to expand its support to agriculture nevertheless the Bank has been financing agriculture development through various line of credit in RMCs.

E.5.3. Engagement with NDAs, civil society organizations and other relevant stakeholders

Please provide a full description of the steps taken to ensure country ownership, including the engagement with NDAs on the funding proposal and the no-objection letter.

Please also specify the multi-stakeholder engagement plan and the consultations that were conducted when this proposal was developed.

The AfDB had several stakeholder engagements and consultations for the AFAWA programme in Ghana. These include the following:

1. Scoping mission in Ghana from 4-8 September 2017: A 5 staff delegation from the relevant department undertook the mission to:

a) Identify business activities in the agriculture sector targeting women MSMEs; agricultural value chain activities that will be eligible for adaptation and mitigation measures within the GCF indicators for the focal areas; Eligibility criteria of the qualifying transactions relating to issues such as climate change, credit risk profile, ESS, Additionality and Development Outcome Assessment (ADOA); potential measurement, evaluation, monitoring and reporting of the climate benefits from the eligible activities within GCF Results Management Framework and Performance Indicators. Specific criteria to be included in the program design, inconsistency of ESMS classification should not apply. Given the programme approach, it is recommended that before admission of new FIs, they will be subject to ESMS, ADOA and Credit Risk checks and (where relevant) cleared on a lapse of time basis (LOTB) to

b) Evaluate what financial services commercial banks are providing to women MSMEs and FBAs and how to incentivize banks to engage in projects that will increase access to finance for climate resilient agriculture and women in the agricultural value chain.

c) Design of institutional arrangements between banks and respective stakeholders and identifying opportunities to incorporate direct and indirect feedback from various stakeholders including women MSMEs/FBAs, Bank of

Ghana, GIRSAL, local banks, non-bank financial institutions, insurance companies as well as non-female suppliers and commodity buyers in the agricultural value chain.

d) Identify areas that will require technical assistance and the modalities including the use of audio visual materials and functional literacy and numeracy to improve understanding by particularly women MSMEs and FBAs who may not be literate.

Among the institutions contacted were the Ministry of Food and Agriculture, Ministry of Energy, Ministry of Gender, Children and Social Protection, Ministry of Finance and Economic Planning, Ghana Commercial Bank, LFIs, Fidelity Bank, Women's World Bank, UniBank, KfW, IFC, IFAD, AgDevCo Ghana, Adventist Development and Relief Agency (ADRA), Root Capital, JCS Investments.

There was also stakeholder workshop that included representatives from Association of Ghana Industries (AGI); Vegetable Producers and Exporters Association of Ghana (VEPEAG); Ghana Association of Women Entrepreneurs (GAWE); Ghana Micro Finance Institutions Network (GHAMFIN); National Board for Small Scale Industries (NBSSI); African Agribusiness Incubators Network (AAIN).

2. Meetings with the Minister of Finance, Governor of the Bank of Ghana, GIRSAL Secretariat and National Designated Authority from 20-26 November, 2017, Accra, Ghana.

This meetings provided the opportunity to have feedback from the Minister of Finance and the Governor of the Central Bank as to the design of the AFAWA financing structure with the expected executing entities (EE) being banks and not GIRSAL. Accordingly, GCF proceeds will not be channeled through GIRSAL but through the commercial bank (s).

The meetings also provided the opportunity for consultations with the Ministry of Food and Agriculture (MOFA) and the Ministry of Gender, Children and Social Protection (MGCSP), Energy Commission (EC), Ministry of Energy (MOE) and Ministry of Finance and Economic Planning (MOFEP) about the appropriate alignment with GIRSAL and how eligibility for the target beneficiaries. MOFA designated Women in Agriculture Development (WIAD) and meetings were held with the Director. As part of the stakeholder engagement, WIAD will carry out consultations among the women groups in the Savannah area and compile a database of potential eligible groups with their needs and capacity gaps.

3. Presentation of the AFAWA funding proposal to the Technical Committee of the NDA on 29 and 30 November, 2017.

As part of the requirement for national ownership and alignment with national needs, the AfDB team submitted the funding proposal to the Technical Committee who shared it will all the key stakeholders for comments before meeting. The AfDB then made a presentation to the Technical Committee of the NDA including all the key stakeholders in the multi-sector committee on 29 and 30 November 2017. The stakeholders provided feedback on the design of the programme and implementation arrangements. The AFAWA funding proposal was cleared by the TC to be included in the Ghana country programming for GCF and AfDB was requested to seek letters of support from the MGCSP and MOFA in order to secure the NOL.

4. Meetings with Ministry of Gender, Children and Social Protection Ghana and Women in Agricultural Development (WIAD) from April 30 to May 2, 2018.

This was a follow up meeting after sharing the draft funding proposal with the MGCSP and the MOFA. The meetings provided the opportunity to consider modalities and eligibilities for the gender dimension of the programme. The meetings also provided the opportunity for WIAD to share the consultations they have made in the Savanna areas with women groups and the database they have put together for the AFAWA programme target beneficiaries. In order not to create unnecessary expectation of impending concessional finance that will cause positioning and even formation of enterprises by men to be fronted by women, WIAD consultations focused on identifying the needs and

the capacity gaps in terms of for example extension services for climate resilient agriculture, capital budgeting, cash management and entrepreneurial skills to inform the design of the technical assistance. The women groups met were not promised of any planned credit facility.

5. Meetings with LFIs, NDA, Ghana Country Office and GIRSAL Secretariat from April 17 – 19, 2019.

These meetings focused on discussions about the (i) key objectives, activities, expected outputs and outcomes from AFAWA; (ii) the pricing and tenor arrangements of the local currency loan product and arrangements for the currency hedging; (iii) expected terms and conditions for the flow of funds for the on-lending, repayments and reflow to the GCF; (iv) the implementation arrangements and potential roles and responsibilities of LFIs.

6. May 13, 2019 Stakeholder Meetings with NDA, GIRSAL Secretariat, LFIs, WIAD and Ministry of Gender, Children and Social Protection.

These meetings provided the opportunity to go over the demand scoping carried out by LFIs with the database profiling the capital needs for different eligible climate resilient agricultural investments for the women MSMEs/FBAs. It also provided the opportunity to go over the implementation arrangements and specific roles and responsibilities for the implementation.

The AfDB and LFIs staff also had the opportunity to once again interact with some of the women-led MSMEs/FBAs already engaged during the visit of the GCF 2 staff delegation to Ghana from May 14 t0 16 2019. A field visit was organize in Tamale in the Northern Region on May 15, 2019 to provide the opportunity for the GCF staff to hear and see for themselves the compelling climate rationale especially in terms of the dryness of the Savannah agro-ecosystem, the high climate risks, increasing deforestation rates as a result of absolute dependence on biomass based energy sources and the potential of the AFAWA programme in enhancing resilience and reducing carbon emission from activities in the agricultural value chain.

E.6. Efficiency and Effectiveness

Economic and, if appropriate, financial soundness of the project/programme

E.6.1. Cost-effectiveness and efficiency

Describe how the financial structure is adequate and reasonable in order to achieve the proposal's objectives, including addressing existing bottlenecks and/or barriers; providing the least concessionality; and without crowding out private and other public investment.

The entrance of climate finance into agriculture sector and agricultural sub-sector will be impeded by the same old constraints unless they are addressed while also achieving positive climate outcomes and climate co-benefits. To ensure that additional capital is effective, it is essential to strengthen the currently weak links between financial institutions and farmers in Ghana in particular women who are marginalized in access to finance and seed capital for their micro small enterprises' activities. Improving access to finance in climate resilience agricultural activities will improve the livelihood of these women and ultimately help to improve the sustainability of the environment. It will also assist Ghana to achieve her national determine contribution (NDC) of reducing carbon emission from 0.5 tCO2e per capita to 0.8tCO2e by 2030.

Climate finance through concessional terms is uniquely positioned to address some of the bottleneck facing the agriculture and Agric-business sector in Ghana as a result to lack of/ or shortage of dedicated facility to support women and women-owned business to access financial capital. This programme is designed to help the GoG to overcome this constraint and therefore significantly increase the flows of climate finance to smallholder farmers, SMEs and other women businesses within the agricultural value chain in the country. The TA component will help the GOG to build the capacity of both the private sector which will include the selected banks that will un-lend the facility,

the desk officer that will perform due diligence for the selection process of the target recipient and also the government officials both in the ministry of finance, Bank of Ghana, ministry for Agriculture, ministry for women and youth and other government stakeholders that will be involve in the programme implementation.

Lastly, the GCF's involvement will in no way be crowing out private capital, but on the contrary, will be key to crowd-in private capital that requires downside capital protection to invest in such high-risk impact driven investment vehicles.

Please describe the efficiency and effectiveness, taking into account the total project financing and the mitigation/ adaptation impact that the project/programme aims to achieve, and explain how this compares to an appropriate benchmark. For mitigation, please make a reference to E.6.5 (core indicator for the cost per tCO2eq)

E.6.2. Co-financing, leveraging and mobilized long-term investments (mitigation only)

Please provide the co-financing ratio (total amount of co-financing divided by the Fund's investment in the project/programme)and/or the potential to catalyze indirect/long-term low emission investment.

The expected co-financing amount from local banks is US$5 millionin loans. Co-financing ratio (Co-financing/GCF financing) is 1:0.28.

The programmeis expected to leverage additional private investment of US$30million.

The MSMEs/FBAs will have their own capital in the agribusiness that will be supported with the GCF funding. GCF funding will not fund everything. it will catalyze private sector investments not only from LFIs but from vendors, suppliers and the MSMEs/FBAs themselves

Please make a reference to E.6.5 (core indicator for the expected volume of finance to be leveraged).

E.6.3. Financial viability

Please specify the expected economic and financial rate of return with and without the Fund's support, based on the analysis conducted in F.1.

As stated earlier the financing from the GCF is of paramount importance for this program. Without the takeoff investment from the GCF, it would be very difficult to develop this local currency loan product that will be directed to women-led MSMEs/FBAs in climate resilience agriculture in Ghana.

Please describe financial viability in the long run beyond the Fund intervention.

By creating this new local currency loan product, the GCF is enabling a new and unique investing vehicle targeted to women, and women - owned businesses intervention in Agric-business that will build climate resilient and improve farmer livelihoods while reducing income volatility from climate risk shocks. If this new local currency loan product can prove that there are viable investment opportunities in this target sector over the next couple years, AfDB will support GoG to mobilize both domestic and international private capital on the back of this success, which will serve to scale GCF's adaptation goals. Thus, the GCF's proceeds for this local currency loan productis focused on for-profit enterprises, these companies should be able to continue to scale and remain financially viable once the investment capital has been returned.

Please describe the GCF's financial exit strategy in case of private sector operations (e.g. IPOs, trade sales, etc.).

Adequate measures are being considered for financial exist. The due diligence that is being undertaken by the AfDB will provide information to monitor areas in LFIs financial and operational profile that are of concern for potential credit

risks. Measures are also being put in place for currency swap to address potential volatility in exchange rates that can inversely affect the amount and currency of the reflows of the GCF proceeds.

For the women-led MSMEs and FBAs, measures are in consideration to provide technical assistance for financial management to reduce the risks of default.

E.6.4. Application of best practices

Please explain how best available technologies and practices are considered and applied. If applicable, specify the innovations/modifications/adjustments that are made based on industry best practices.

African Development Bank will bring onboard innovative solutions in Agric-business in a climate smart way. The facility will make use of the best practices of the Bank's operations in the sector which has accumulated over the past 50 years on the African continent. These innovative approaches will not only be limited to:

- Country ownership that aligned with GoG national plans and strategies on gender, climate change and energy – agriculture-food nexus.
- Leveraging the private sector investment by crowding in' more private sector operators.
- Develop management for results and ensured enough value addition.
- Inclusivity sustainability and partnerships collaboration among the different stakeholders (both global and national) operating in the agriculture space in Ghana.

The programme through the TA component will apply business-oriented approach such as; reorientation away from treating agriculture as a 'way of life' or social welfare system to a business acumen that will be public-sector enabled and private-sector driven. The programme will create avenue to access to credit in micro, macro level and technical know-how on modern agriculture practices such as hybrid disease resistant seeds, and climate smart infrastructure like solar power irrigation systems, clean cooking technology and other climate smart infrastructure throughout the agricultural value chain.

Even without the GIRSAL instruments such as credit guarantee and agricultural insurance, the local currency loan product and technical assistance for climate resilient agricultural practices for women-led MSMEs and FBAs in climate resilient agricultural practices could be replicated across Africa. The Women Entrepreneurs Finance Initiative (WeFi) summit in Abidjan, Cote d'Ivoire on April 17, 2019 that hosted high level participation from His Excellency Alassane Ouattara, President of the Republic of Côte d'Ivoire, Ivanka Trump, Advisor to the President of United States, Kristalina Georgieva, former Interim President of the World Bank and Akinwumi A. Adesina, President of the African Development Bank are looking at replicating such innovative programs that enhances access to finance for women entrepreneurs. This programme which seeks to pursue access to finance for women in the agricultural sector that is one of the challenging sectors for private sector investments will provide several lessons and best practices for replication across the African region.

The programme will also promote replacement of technologies such as diesel based generators, tractors and combine harvesters with biogas based generators, tractors and combine harvesters for reducing emissions in the agriculture value chain.

E.6.5. Key efficiency and effectiveness indicators

GCF core indicators	Estimated cost per t CO_2eq, defined as total investment cost / expected lifetime emission reductions (mitigation only)

(a) Total project financing (Mitigation: 66%) – loan only	US$15.45
(b) Requested GCF amount (Mitigation: 70%) – loan only	US$12.95
(c) Expected lifetime emission reductions overtime	3.2M_____ tCO_2eq
(d) Estimated cost per tCO_2eq (d = a / c)	US$__**4.78**___/ **$tCO_2eq$**
(e) Estimated GCF cost per $tCO_2eqremoved$ (e = b / c)	US$__**4.01**___/ **$tCO_2eq$**

The indicative allocation of the GCF funds between mitigation and adaptation is provided in section E.1.

LFIs have great constraints for medium to long term finance due to high dependence on short term deposits and other regulatory constraints such as BASEL III requirements. The co-financing amount will therefore be used to fill the gap for working capital financing for farming loans involving land clearance, seeds and other activities that will be relevant for the CRA. Due to the short term nature of the co-financing, it will not finance capital expenditure for medium to long-term assets suchas solar and biogas.

Describe the detailed methodology used for calculating the indicators (d) and (e) above.

Details calculations can be found in the energy model calculations and crop and climate smart agriculture financial models. However, the basic assumption for the extrapolation are that;

The average farm size holding for women-led MSMEs in Ghana = 10 hectares

The average for women-led farmers-based associations (FBAs) = 5 hectares.

The interest rate used is 19.85%

Please describe how the indicator values compare to the appropriate benchmarks established in a comparable context.

Expected volume of finance to be leveraged by the proposed project/programme and as a result of the Fund's financing, disaggregated by public and private sources (mitigation only)

Describe the detailed methodology used for calculating the indicators above.

Please describe how the indicator values compare to the appropriate benchmarks established in a comparable context.

If we consider the cost difference in the project financing analysis between the scenarios with 19.85% interest and 13.96%, we estimate total savings of GHS 41,711 per hectare, or $8,822.16. With a total loan of $18.5 million, the total number of hectares supported by the project (if we consider only agriculture, not energy, as an illustrative case) would be 2097. This is calculated by diving the loan amount by the average saving per hectare (GHS 8,822.16).

If farmers, given the more economical conditions generated by the GCF decide to invest in CRA activities, this will lead to a total investment of $ 39,917,372. This is calculated by multiplying the total number of hectares by the average cost per hectare of CRA activities (GHS 90,022). This indicates that the support provided by the GCF could be leveraged 2.16 times.

	In addition, if we consider the net amount of revenues that would be created by CRA investments (on top and above the baseline scenario), the total contribution of the loan provided by the GCF would reach $594 million (or 32 times the loan amount). This is calculated by considering the average additional revenue per hectare (GHS 6.7 million) multiplied by the total number of hectares supported by the project (2,097, as indicated above). The actual volume of finance could be higher or lower than the value indicated above, depending on the actual allocation of investments across CRA interventions and power generation technologies. The estimation of the installed capacity for the solar systems was based on IRENA benchmark of $1 million/1 MW. The estimation of the emission reduction from replacement of diesel by solar and biogas used benchmark emission factor for diesel and the net carbon reduction from conversion of methane to biogas used benchmark IPCC methodologies and figures.
Other relevant indicators (e.g. estimated cost per co-benefit generated as a result of the project/programme)	Estimated ecosystems co-benefit is valued at $392.00 per hectare over the project lifespan and beyond.

**** The information can be drawn from the project/programme appraisal document.***

F.1. Economic and Financial Analysis

Please provide the narrative and rationale for the detailed economic and financial analysis(including the financial model, taking into consideration the information provided in sectionE.6.3).

Climate-resilient agricultural practices have been found to mitigate climate impacts on agriculture productivity and to generate additional benefits, by increasing resilience to floods and droughts (FAO, 2012; USAID , 2017). These practices can in fact contribute to improving soil quality and potentially double the yield per hectare (USAID , 2017). An overview of benefits generated by selected climate-resilient agricultural practices is provided in Table F.1 below while the respective economic valuation by benefit is shown in Table F.2.

Table F.1: Summary of benefits obtained from CRA practices (USAID , 2017)**.**

CSA practice	Soil erosion	On-farm biodiversity	Carbon sequestration	Soil biodiversity	Water availability	Political and socail capital *
Minimum tillage	Reduces soil erosion	Increases species of plants per unit area	Improves air quality by sequestering carbon	Increases soil fertility through increased decaying organic matter	Increases water infiltration by slowing flow of water	No significant effect
Improved agronomic practices, *e.g. crop rotation*	Reduces soil erosion	increases on-farm plant diversity (i.e. weeds)	Improves air quality by sequestering carbon	Increases soil fertility through decaying biomass and carbon in the soil	Increases water infiltration by slowing flow of water	Increases social (through labor) and political capital
Integrated nutrient management, *e.g. efficient fertilizer application, split application, timing*	Reduces soil erosion	Increases species of organism per unit area	Improved air quality through reduced ammonia emission from manure storage facilities	Increases soil fertility through decaying biomass and carbon	Enhances infiltration because of improved soil structure	Increases political and social capital (technical expertise and decision making capacity)
Improved genetic resources, *e.g. hybrid seeds to improve yield without changing production practices*	No significant impact	No significant impact	No significant impact	No significant impact	No significant impact	Increases political and social capital
Mixed cropping to make efficient use of inputs	Reduces soil erosion	Increases species of plants per unit area	Enhances carbon sequestration	Increases soil fertility (from crop residues)	Enhances water infiltration	Increases social and political capital

*Increased social and political capital is through interaction with other farmers, extension agents, development partner and government agencies promoting specific CSA practices.

Table F.2: Summary of positive externalities obtained from selected CRA management practices (USAID , 2017).

	List of positive externalities for various interventions						
	Reduction in soil erosion	Increase in biodiversity	Improvement in air quality	Increased soil biodiversity	Improvement in water availability	Improved social capital	Improved politi capital
Minimum tillage	$ 21.90	$ 10.60	$ 2.50	$ 25.00	$ 37.50	$ 12.00	$ 15.80
Improved agronomic practices, *e.g. crop rotation*	$ 8.70	$ 7.80	$ 2.50	$ 17.80	$ 11.30	$ 13.10	$ 16.30
Integrated nutrient management, *e.g. efficient fertilizer application, split application, timing*	$ 16.30	$ 29.30	$ 27.40	$ 9.80	$ 27.50	$ 19.90	$ 15.50
Improved genetic resources, *e.g. hybrid seeds to improve yield without changing production practices*	$ 4.50	$ 7.50	$ 2.50	$ 5.00	$ 5.00	$ 0.00	$ 0.00
Mixed cropping to make efficient use of inputs	$ 33.80	$ 15.00	$ 10.00	$ 24.00	$ 28.80	$ 14.00	$ 12.00

However, the cost effectiveness of adopting CRA practices is challenging. USAID (2017) conducted a study on private and social benefits of CRA practices as well as their costs. The aim of this study was to better understand the implications of these factors in terms of adoption from farmers and additional social benefits. A Cost-Benefit Analysis (CBA) model was used to assess the net benefits generated by CRA practices compared to the current baseline.

Table F.3 and F.4 provide supplementary information about the implementation costs per hectare (Table F.3), and net present value (NPV), Internal Rate of Return (IRR) and the payback period (Table F.4) of the assessed CRA practices, as estimated by this study.

Table F.3: Summary of implementation, maintenance and operation cost of selected CRA management practices

CSA practice	Implementation cost	Maintenance cost	Operation cost
Minimum tillage	$ 691	$ 70	$ 387
Improved agronomic practices, *e.g. crop rotation*	$ 220	$ 200	$ 489
Integrated nutrient management, *e.g. efficient fertilizer application, split application, timing*	$ 63	$ 31	$ 0
Improved genetic resources, *e.g. hybrid seeds to improve yield without changing production practices*	$ 689	$ 63	$ 0
Mixed cropping to make efficient use of inputs	$ 717	$ 72	$ 97

Table F.3: Summary of implementation, maintenance and operation cost of selected CSA management practices (USAID , 2017).

Table F.4: **Summary of net present value, Internal Rate of Return and Payback periods for selected CRA management practices**

CSA practice	Probability distribution average		Payback period
	NPV (26%) in US$	IRR (%)	(Years)
Minimum tillage	-2,945	-231	-
Improved agronomic practices, *e.g. crop rotation*	2,641	69	1
Integrated nutrient management, *e.g. efficient fertilizer application, split application, timing*	2,241	227	1
Improved genetic resources, *e.g. hybrid seeds to improve yield without changing production practices*	1,348	107	2
Mixed cropping to make efficient use of inputs	359.6	62	1

Table 6: Summary of net present value, Internal Rate of Return and Payback periods for selected CSA management practices (USAID , 2017)

In order to assess the potential impact of the support provided by the GCF to the implementation of climate resilience smart agriculture interventions we have built on previous experience and the literature, and have carried out the following analysis:

- We have considered cassava, maize, okra, pepper, rice, tomatoes, watermelon and beans and an area of 1 hectare for implementation (as well as for cost and revenue calculation).
- We have assumed, in a baseline scenario, that yield will progressively decline year after years, reaching a reduction of 20% by 2035. The timeline of the analysis is 2019 – 2035.
- We have analyzed five climate resilience agriculture (CRA) interventions: (1) crop rotation, (2) mixed cropping, (3) improved nutrient management, (4) improved genetic resources and (5) minimum tillage.
- We have created a project financing model to estimate the internal rate of return (IRR), net present value (NPV) and debt coverage ratio (DCR) for each of the 5 interventions analyzed. Currently the increase in productivity of crops is calibrated based on the NPVs obtained from the USAID (2017) study.
- For the project financing model, we tenor of 5 years, grace period of 3 years, interest rate of 5%. All assumptions (including yield, market prices, and costs of each intervention) are presented in the Excel files attached and can be easily adjusted.

Results are generated by crop and by intervention, Table F.5 and Table F.6 present crop portfolio results (i.e. results aggregated by intervention, across all crops) respectively for IRR and NPV and for DCR when considering only net costs and net revenues.

Results show that the IRR is positive for all interventions, with improved nutrient management being the most profitable intervention, followed by crop rotation. It is worth noting that even the least profitable intervention, minimum

tillage, shows an IIR in the range of 15.5% and 26.6% and payback time of 3 years (which considers reduced productivity in the short term).

These results indicate that there is strong potential for avoiding climate impacts when using CRA interventions, and that these are also economic viable investments for farmers especially women. If support were to be provided to increase access to financing, the risk of a loan being repaid would be low, given the strong upside of productivity and production, and hence revenues. The payback time generally ranges between 1 and 3 years with the DCR looking positive almost immediately for most crops.

This analysis does not aim at identifying the best, or optimal portfolio of investments, considering different types of crops and intervention options. The goal was instead to assess the risk connected to the project, and the disbursement of funds as indicated in the proposal. It is therefore expected that two key factors will be taken into consideration when planning for the disbursement of funding (e.g. up to $10 million):

- It is crucial to identify what are the areas that are most threatened by climate change and extreme weather events, and what crops (and related yields) are observed in the region. This is to identify the potential upside in land productivity, production and revenues creation resulting from the implementation of CSA practices. Based on literature, it can be expected that yield be as much as 80% higher in critical areas.

- It is paramount to invest in awareness raising and capacity building. The investment will be implemented effectively only if farmers are aware of their advantages and can familiarize with new farming techniques. As a result, a capacity building component should accompany the allocation of funds to farmers or farmers associations.

Having shown the potential returns for the investment proposed, the actual disbursement of funds from the donors and project will depend on the trajectory and ramp up of operations over the years, possibly through farmers associations that could both identify risks and offer capacity building, before approving the transfer of funds.

Table F.5: Summary of results: IIR and NPV of various intervention options (19.85% interest rate).

	Unit	1. Crop rotation	2. Mixed Cropping	3. Improved nutrient management	4. Improved genetic resources	5. Minimum tillage
Tenor	Years	15 years				
Grace Period	Years	0 years				
Total loans amount	**GHS**	**41,607 GHS**	**135,600 GHS**	**11,915 GHS**	**130,304 GHS**	**130,682 GHS**
Interest rate	%	19.85%	19.85%	19.85%	19.85%	19.85%
Cumulative interest payments	GHS	64,970 GHS	211,743 GHS	18,605 GHS	203,474 GHS	204,065 GHS
Cumulative CPLTD payments	GHS	38,278 GHS	124,752 GHS	10,961 GHS	119,880 GHS	120,228 GHS
Cumulative positive externalities	**GHS**	**85,010 GHS**	**150,934 GHS**	**159,818 GHS**	**26,874 GHS**	**137,442 GHS**
Portfolio IRR (2019-2024)	Project (no externalities)	-32.3%	-62.2%	229.8%	-69.6%	N/A
	Project (with externalities)	-24.5%	-47.5%	354.5%	-66.5%	N/A
	Asset (no externalities)	-14.4%	-7.3%	250.4%	-7.6%	-52.5%
	Asset (with externalities)	-7.7%	3.1%	378.3%	-5.5%	-41.7%
Portfolio IRR (2019-2035)	Project (no externalities)	14.7%	10.7%	231.9%	8.7%	-14.3%
	Project (with externalities)	18.0%	15.3%	355.0%	9.6%	-8.1%
	Asset (no externalities)	22.2%	29.2%	252.1%	29.0%	7.0%
	Asset (with externalities)	25.8%	34.8%	378.8%	30.2%	11.3%
NPV	5%	94,020 GHS	72,686 GHS	353,932 GHS	40,829 GHS	-194,606 GHS
	5% (with externalities)	125,789 GHS	129,092 GHS	413,659 GHS	50,873 GHS	-143,242 GHS
	10%	32,907 GHS	6,071 GHS	236,344 GHS	-10,538 GHS	-182,600 GHS
	10% (with externalities)	55,841 GHS	46,790 GHS	279,461 GHS	-3,288 GHS	-145,520 GHS
	26%	-35,702 GHS	-59,714 GHS	87,046 GHS	-58,714 GHS	-146,062 GHS
	26% (with externalities)	-24,707 GHS	-40,192 GHS	107,717 GHS	-55,238 GHS	-128,285 GHS
Avoided emissions (2019-2035)	Tons	48.6	194.3	532.3	48.6	48.6

Table F.6: : Summary of results: DSCR of various intervention options (19.85% interest rate)

Debt Coverage Ratio	Type	2019	2020	2021	2022	2023	2024	2025	2026	2027
Crop rotation	Project	N/A	-6.17	-0.34	1.09	2.74	2.95	3.63	3.85	4.09
	Asset	N/A	-5.81	-0.28	1.08	2.65	2.86	3.50	3.71	3.94
Mixed cropping	Project	N/A	1.00	1.41	1.42	1.69	1.64	1.92	2.02	2.16
	Asset	N/A	1.00	1.39	1.40	1.66	1.61	1.87	1.97	2.10
Improved nutrient management	Project	N/A	12.81	13.77	12.98	14.93	14.13	16.33	17.44	18.45
	Asset	N/A	12.22	13.13	12.38	14.24	13.47	15.56	16.62	17.58
Improved genetic resources	Project	N/A	1.27	1.45	1.42	1.60	1.55	1.76	1.88	1.98
	Asset	N/A	1.26	1.42	1.40	1.57	1.52	1.72	1.83	1.93
Minimum tillage	Project	N/A	-1.08	0.14	0.43	0.81	0.86	1.05	1.10	1.18
	Asset	N/A	-0.97	0.18	0.46	0.82	0.86	1.05	1.09	1.17

F.2. Technical Evaluation

Please provide an assessment from the technical perspective. If a particular technological solution has been chosen, describe why it is the most appropriate for this project/programme.

Based on the economic analysis presented above and comparing it to USAID 2017 base case, it is very obvious that, climate resilience agricultural practices hold great potential for the future in Ghana. Thus, the programme is worth investing in.

F.3. Environmental, Social Assessment, including Gender Considerations

Describe the main outcome of the environment and social impact assessment. Specify the Environmental and Social Management Plan, and how the project/programme will avoid or mitigate negative impacts at each stage (e.g. preparation, implementation and operation), in accordance with the Fund's Environmental and Social Safeguard (ESS) standard. Also describe how the gender aspect is considered in accordance with the Fund's Gender Policy and Action Plan.

The programme is generally classified as a medium risk investment project by the AfDB Category 4 FI-B. AfDBhas established a comprehensive ESMS for the programme based on the AfDB's well-established Environmental and Social Assessment Procedures (ESAP) of its Integrated Safeguards System (ISS). This is to ensure that LFIs comply fully with all the requirements needed to ensure mitigation of potential environmental and social impacts associated with the programme implementation. LFIs are required to develop and maintain an ESMS in line with the AfDB's Operational Safeguards (Oss) that is appropriate for the scale and nature of its operations. The proposed subproject under program may pose minimal environmental and social risk and thus an ESMS will be a pertinent instrument for the LFIs. Notwithstanding, LFIs are required to apply the AfDB's OSs and equivalent procedures to the CRA activities to be undertaken by the women-led MSMEs/FBAs and to comply with local environmental and social requirements in Ghana.

LFIs are fully aware of its corporate responsibility to sound environmental and social management practices, and will undertake this program in compliance with National laws and in accordance with AfDB and GCF safeguards policies. An indicative environmental and social risks and impacts associated with the proposed project and the respective mitigation measures are discussed in a ESMS submitted as the required attachment to be used for project specific environmental, social and safety risks and impacts assessment and management. An environmental monitoring programme also briefly suggested in the ESMS to help detect changes arising from the predicted adverse impacts and to help maintain environmental quality within acceptable guidelines.

F.4. Financial Management and Procurement

Describe the project/programme's financial management and procurement, including financial accounting, disbursement methods and auditing.

<u>Due Diligence</u>

The AfDB team responsible for financial institutions will carry out due diligence and assessments of LFIs that will implement the local currency loan product under the component one.Usually, the findings and recommendations of the due diligence team undergo a rigorous internal review process before they are cleared by Senior Management to be presented to the Bank's Board of Directors for approval. This includes various interdepartmental committee reviews.

The AfDBwill, through its Anti-Corruption and Integrity department, provide Integrity Due Diligence (IDD) for the programme operations through a structured, systematic analysis to identify, assess, mitigate, manage and monitor potential loss from integrity risks and riskier exposure. This is to ensure that funds are used for their intended purposes and with due attention to considerations of economy, efficiency and competitive trade. The Bank will use the following assessment criteria to safeguards its investment. (See also the Bank's IDD Policy for further information).

- Identification of beneficial ownership
- Assessment of civil and regulatory backgrounds

- Identification of sanctioned persons and entities
- Identification of Politically Exposed Persons (PEPs) and other high-risk relationship

Corporate financial transactions are closely monitored through the MDB harmonized treatments of corporate groups and also through the bank's established guidelines on anti-fraud, anti-corruption and anti-money laundering policies (AMLCFT)[36]. The AfDB continues to ensure that its financing operations and investments are not used for illegal or tax-evasion purposes. In addition, measures are currently in place to address the issue of tax havens and the accompanying risks.

The AfDB will lead standard KYC due diligence process including anti-money laundering and other evaluations of sponsors. This principle will be equally applied in the identification of beneficiaries of the TA activities. For the procurement of TA service providers, while the beneficiary organizations are responsible for the procurement, the AfDB will be closely supervising the process and its outcome (described in more detail below).

Financial Management

For the senior loans, financial management will follow the AfDB's "Guidelines for Financial Management and Financial Analysis of Projects", which describes and explains the Banks' policies, procedures and approaches to the financial management and analysis of projects and programs that the Bank finances. The implementation of the grants will follow the AfDB's financial management system, which covers budget planning and implementation, procurement, financial statement preparation and reportingAfDB will assess financial management of LFIsas part of the due diligence. The purpose of this assessment is to evaluate LFIs' accounting systems and internal control systems and verify that their standards are adequate for effective programme implementation. However under thisprogramme, it is expected that the AfDB will be directly responsible for financial management of grants without making a transfer to the beneficiaries.Although, it's unlikely for LFIs to be involved in procurement of goods and service under this programme, when necessary, AFDB, in its role as the Accredited Entity will retain full responsibility for any delegated authority to LFIs over financial management and /or procurement.

Disbursement

Loans: The borrower is entitled to request disbursements of funds from the AfDB, for amounts spent or planned to be spent for the purposes set out in the financing agreement between the two parties, subject to fulfillment of conditions outlined in the financing agreement. Except with the AfDB's consent, no disbursements shall be made (a) on account of expenditures procured in violation of the AfDB's Procurement Rules; or (b) to finance expenditures incurred prior the date of the financing agreement other than those that are expressly permitted. Requests for disbursement shall be made promptly and in conformity with the AfDB's disbursement rules and procedures.

TA grants: The direct payment methods will be used. The AfDB will directly pay the consultants and service providers against the terms that will be negotiated in the agreement between them and the beneficiaries.

[36] Relevant frameworks and policies within the AfDB include:
- The Bank's revised Strategic Framework and Action Plan on the Prevention of Illicit Financial Flows in Africa and Policy on the Prevention of Illicit Financial Flows,
- Strategy for the Prevention of Money Laundering and Terrorism Financing in Africa (ADB/BD/ WP/2007/70 and ADF/BD/WP/2007/46), July 2007,
- Integrity Due-Diligence Policy for Non-Sovereign Guaranteed Operations (ADB/BD/WP/2014/96 - ADF/BD/WP/2014/64), June 2014, and
- Integrity Due-Diligence Guidelines for Non-Sovereign Guaranteed Operations 2014.

Supervision and Portfolio Management

The AfDB is responsible for fulfilling the reporting obligations to the donors. Reporting is based on the progress of indicators included in the Results Measurement Framework. The AfDB management will ensure that the programmeportfolio is diligently managed, through close dialogue with clients and periodic monitoring and evaluation. The objective is to enhance the prospects of: (a) delivering expected development outcomes; (b) minimizing harmful environmental and social impacts over the course of projects' economic life; and (c) meeting debt repayment obligations for the loans. At least, bi-annual supervision missions will be organized to review implementation progress and performance of the activities under the framework.

Procurement

To ensure that financing is applied in ways that adequately secure the AfDB's mandate while maximizing development effectiveness, the AfDB encourages and promotes sound, fair, transparent and well performing procurement systems. The AfDB's "**Procurement Policy for AfDB Funded Operations**" (dated August 2015) applies to the framework. This Policy sets out the principles that apply to Borrowers' procurement of goods, works and acquisition of consulting services financed in whole or in part by the Bank. It is supplemented by three additional documents: (i) Methodology for Implementation of the Procurement Policy of the African Development Bank (Methodology); (ii) Operations Procurement Manual for the African Development Bank (OPM); and (iii) Procurement Toolkit for the African Development Bank (Toolkit). Collectively, the Policy, the Methodology, the OPM and the Toolkit are referred to as the "Procurement Framework". The Policy is the overarching document and in the event of a conflict between it and any other documents of the Procurement Framework, this Policy will prevail. In the event of any inconsistency between the remaining documents comprising the Procurement Framework, the following hierarchy shall be followed: the Methodology, the OPM, and the Toolkit.

The selection and engagement of consultants and the procurement of services shall be carried out in accordance with the AfDB's applicable policies, rules and procedures. The AfDB will sign the contract with the services providers for the TAs.

Audit

The framework will be subject to the AfDB's normal internal audit policies, meaning it will be audited annually by external auditors. The utilization of the Bank's and the GCF resources will be subject to external audit following international best practices in audit accounting. This will be carried out by an independent external auditor acceptable to the Bank every year and at the completion of the activity for which support has been provided. Beneficiaries of externally executed grants shall recruit an auditor for these as per the terms of the grant agreement to be signed. The cost of audit services shall be incorporated into the cost estimates for each approved project/activity.

G.1. Risk Assessment Summary

Please provide a summary of main risk factors. Detailed description of risk factors and mitigation measures can be elaborated in G.2.

Given that the programme builds on the AFAWA window and that of GIRSAL, the occurrence of high category risks is unlikely to occur. However, a few low to medium scale risks are envisaged. These include:

- **Climate Change and Agricultural Risk**: Ghanaian agriculture and food systems are climate dependent and recognized as one of the most vulnerable sectors to climate change. Given that the focus of the programme is in Northern Ghana, characterised by huge inter-temporal variabilities in climate change, this possess a great challenge and risk for the programme.
- **Credit Risk**: associated with group default to make required payments resulting from poor harvest, post-harvest lost, bad weather, death or even poor financial status after loan.
- **Macroeconomic Risk**: The success of the programme is highly dependent on sound investment decision by FIs in climate sensitive agriculture: an area not of much interest to FIs. It also hinges on stable macroeconomic conditions to prevent exchange rate fluctuations, inflation and huge interest rate variations.

G.2. Risk Factors and Mitigation Measures

Please describe financial, technical and operational, social and environmental and other risks that might prevent the project/programme objectives from being achieved. Also describe the proposed risk mitigation measures.

Selected Risk Factor 1: Climate Change and Agricultural Risk Factor

Description	Risk category	Level of impact	Probability of risk occurring
Climate change is forecasted to have meaningful impacts in Ghana in the decades to come (UNDP, 2013). Historical data for Ghana from the year 1961 to 2000 clearly shows a progressive rise in temperature and decrease in mean annual rainfall in all the six agro-ecological zones of the country. Climate change is manifested in Ghana through: (i) rising temperatures, (ii) declining total rainfall and increased variability, (iii) rising sea levels and (iv) high incidence of weather extremes and disasters (UNDP, 2013). Like most African countries, Ghana is particularly vulnerable because its economy relies heavily on climate-sensitive sectors such as agriculture, forestry and hydro-energy. Agriculture is the backbone of Ghana's economy, providing employment and subsistence to the majority of the population. With irrigation being almost nonexistent, Ghana's agriculture is highly vulnerable to climate variability. Even without climate change, agriculture in Ghana faces serious challenges such as low productivity due to low input usage (including fertilizers), water supply variability and high transactions costs. There are also market imperfections in the input markets and services including land, labor, credit and extension. The market	Social and environmental	High (>20% of project value)	HighHigh

failure in the agricultural sector therefore increases the vulnerability of resource-poor farmers and complicates the effects of climate-induced shocks, which in turn makes it more difficult for them to cope with climate change. (Asafu-Adjaye, 2013).			

Mitigation Measure(s)

Please describe how the identified risk will be mitigated or managed. Do the mitigation measures lower the probability of risk occurring? If so, to what level?

Several measures have been factored into the programme to help mitigation and manage this risk. Firstly, climate resilience agricultural management techniques (i.e., conservation agriculture; soil and water conservation as well as improved livestock management practices), will be used to increase farm productivity in a sustainable way, build resilience, reduce greenhouse gas emissions and enhance food security at local and national level. Secondly, the adoption of new technology such as solar irrigation and energy, biogas etc., will help improve farmers' resilience in relation to the risk, and their overall farm productivity. Thirdly, weather index-based agricultural insurance schemes will be widely promoted and used to mitigate adverse climate shocks and natural disasters encountered during farming activities.

These mitigation measures are expected to lower the risk from affecting programme outcomes but not the probability of occurrence.

Selected Risk Factor 2: Credit Risk Factor

Description	Risk category	Level of impact	Probability of risk occurring
This is an inherent component of bank lending irrespective of the type of lending. It is associated with the failure of a borrower to meet his or her obligations in accordance with agreed terms. There are several reasons for this type of risk occurring in the programme since it involves agriculture. First, bad weather might affect farm productivity and hence, the ability of a farmer to pay back loan. Second, even after harvesting, most of the produce might be lost through post-harvest. As reported in Afful-Koomson et al., (2014), close to 40% of cash crops in Ghana is lost during post-harvest. Third, sickness or even death might affect debt resettlement. Fourth, weak financial standing may affect feature repayment of loans. All these are likely factors that can cause credit risk in the study.	Technical and operational	Low (<5% of project value)	Low

Mitigation Measure(s)

Please describe how the identified risk will be mitigated or managed. Do the mitigation measures lower the probability of risk occurring? If so, to what level?

Mitigation measures to this risk will include: (i) provide loans only to women-led groups that can be held accountable. Studies have shown that group lending reduces credit default. (ii) Using LoC approach to lending, which has built-in flexibility that are very advantageous in terms of pay back. First, it permits the group to tailor their

spending on the LOC according to their needs and have to pay interest only on the amount they draw, not on the entire credit line. Second, the women-led groups can adjust their repayment amounts as needed, based on their budget or cash inflows. Third, the money can be spent in a revolving cycle thereby, making loan repayment easier. (iii) Ensuring diversify sources of income for women-led groups to ease financial constraints; and (iv) providing support for the institution of formal and informal social security mechanisms such as agricultural insurance schemes, weather index-based insurance schemes, social capital accumulation among others.

All these mitigation measures are expected to reduce the overall occurrence of the risk in the programme

Selected Risk Factor 3: Macroeconomic Risk Factor

Description	Risk category	Level of impact	Probability of risk occurring
The success of the program will highly depend on the technical capacity of LFIS GH in Ghana to invest in climate-sensitive agriculture. Currently, very few FIs in Ghana have this technical competence or well-trained climate investment officers. Equally, macroeconomic instability in the country has seriously affected the value of the Ghanaian Cedes. Over the last five years, the Cedis has greatly depreciated, with the possibility of further depreciation. This has obvious implication for the project: (i) it is likely to affect agricultural prices along the entire value chain with possible multiplier effects on loan repayments among others; and (2) exchange rate gains and losses for the LFIS GH with likely effect on bank lending rate to target beneficiaries.	Other	Low (<5% of project value)	Low

Mitigation Measure(s)

Please describe how the identified risk will be mitigated or managed. Do the mitigation measures lower the probability of risk occurring? If so, to what level?

To mitigate macroeconomic risks, AfDB will provide 2 investment officers and a fund manager to assist in terms of capacity building and training of FIs. Whereas, GIRSAL will work closely with its Ghana based and global crop market experts to gather pricing data as well as monitor early warning systems issued by 3rd parties e.g. US Dept. of Agriculture price forecasts for rice, corn, etc. If additional action is necessary based on the anticipated pathway for crop prices, then the AfDB will work with GIRSAL to provide support to borrowers on how to best communicate the shift, as well as prepare them for potential events of default. In addition, as appropriate, the AfDB will support GIRSAL as it seeks out potential price hedging solutions and innovative tools to protect farmer earnings.

Other Potential Risks in the Horizon

Please describe other potential issues which will be monitored as "emerging risks" during the life of the projects (i.e., issues that have not yet raised to the level of "risk factor" but which will need monitoring). This could include issues related to external stakeholders such as project beneficiaries or the pool of potential contractors.

** Please expand this sub-section when needed to address all potential material and relevant risks.*

H.1. Logic Framework.

Please specify the logic framework in accordance with the GCF's Performance Measurement Framework under the Results Management Framework.

H.1.1. **Funds Impacts at the Sub-project Level**[37]

Expected Results	Core Indicator	Means of Verification (MoV)	Baseline[38]	Target		Assumptions
				Mid-term (15 years)	Final (25 years)	
	Installed Capacity in MW/kW Solar PV	Report of baseline survey on renewable energy penetration in the areas	0 MW of Capacity installed annually	7.4 MW of installed capacity during loan tenor of 15 years	7.4 MW of installed capacity in 25 years	Successful installation of Solar PV based on full disbursement of finances
	Annually generated power in MWh/kWh, solar PV	Report of baseline survey on power generated and power consumed annually by consumer.	0 MWh	11,214,552 kWh/Yr	11,214,552 kWh/Yr	Solar PV are fully installed and power generated is consumed annually by consumer.
	Total generated power in MWh/kWh, solar PV	Report of baseline survey on power generated and power consumed annually by consumer.	0 MWh	168,218,280 kWh of power generated	280,363,800 kWh of power generated	Solar PV are fully installed and power generated is consumed annually by consumer.
	Biogas produced annually (m3)	Report of baseline survey on Biogas replacement of diesel	0m3 of annual Biogas generation	11,589,065 m3/Yr	11,589,065 m3/Yr	Biogas production calculations are based on feedstock aggregation

[37] Based on iTAP's recommendations, we have included a monitoring plan at the sub-project level.
[38] Baseline information is to be confirmed from baseline study for sub-projects at appraisal and before project effectiveness.

	Total Biogas produced (m3)	Report of baseline survey on Biogas replacement of diesel	0m3 of annual Biogas generation	173,835975m3 of Biogas produced	289,726,625 m3of Biogas produced	Biogas production calculations are based on feedstock aggregation
	Installed capacity for power generation (MW/kW) from biogas	Report of baseline survey on renewable energy penetration in the areas	0 kW of Genset Power output	2,546.57kW of Genset Power output	2,546.57kW of Genset Power output	Genset Power output [KW] (Based on hourly available methane)
	Power generated annually (MWh/kWh) from biogas	Report of baseline survey on power generated and power consumed annually by consumer.	0 kWh of annual installed capacity	22,307,993 kWh/a	22,307,993 kWh/a kWh of installed capacity	6,105.94 m3 of biodigester installed and working with 30% efficiency
	Total Power generate (MWh/kWh) from biogas	Report of baseline survey on power generated and power consumed annually by consumer.	0 kWh of annual installed capacity	334,619,889 kWh/a	557,699,816 kWh/a	6,105.94 m3 of biodigester installed and working with 30% efficiency
	Methane gas consumed directly (m3)	From socioeconomic baseline survey on feedstock in the area	0m3 methane gas available annually	106,284,771.63 m3 of methane gas consumed in 15 years	177,141,286.04 m3 of methane gas consumed in 25 years	Annual availability of 7,085,651m3 of methane gas for consumption
	Amount of ha with new land management practices	From socioeconomic baseline survey on land management practices in the area/ MoFA annual statistics	0 ha	1,712 ha	1,712ha	MSMEs and FBAs interests for the new land management practices introduced by the programme
	Emission factor for	Programme emissions	0.00064 tCO2/kWh	0.00064 tCO2/kWh	0.00064 tCO2/kWh	Calculations are for Solar

	diesel generated power (tCO2/kWh)	monitoring reports and baseline surveys				PV vs. diesel power.
	Land emission avoided (tCO2)	Programme emissions monitoring reports and baseline surveyson amount of lands with improved management	0tCO2	33,169.5tCO2	55,282.4 tCO2	Calculated by taking emissions avoided per hectare (average across crops and interventions) and multiplied by annual emissions for total ha (1,712 ha).
	Land management emission avoided (CO2/ha)		1.292 tCO2/ha	-	-	Will be updated periodically based on new research studies

H.1.2. Paradigm Shift Objectives and Impacts at the Fund level[39]	
Paradigm shift objectives	
Shift to low-emission sustainable development pathways	There are several ways in which the project will contribute to low-emission sustainable development pathways. (1) Use of clean and renewable energy along the entire agricultural value chain and agribusiness ventures. (2) Use of sustainable agricultural intensification strategies (i.e., minimum tillage, improved agronomic practices, integrated nutrient management, improved genetic resources, mixed cropping) to reduce GHG emission from agriculture. This shift will be sustained through TA and financial support to FIs and women-led MSMEs to invest in CRA practices.
Increased climate-resilient sustainable development	The project will contribute to climate resilient development pathways through unlocking and unleashing the productive potentials of women to participation in low carbon growth and climate resilience agricultural practices. This shift will be sustained through the provision of innovative financing (LoC) to LFIs for on lending to women-owned agribusiness enterprises, to undertake CRA activities in Ghana.

[39]Information on the Fund's expected results and indicators can be found in its Performance Measurement Frameworks available at the following link (Please note that some indicators are under refinement): http://www.gcfund.org/fileadmin/00_customer/documents/Operations/5.3_Initial_PMF.pdf

Expected Result	Core Indicator	Means of Verification (MoV)	Baseline	Target		Assumptions
				Mid-term (if applicable)	Final	
Core level indicators (Mitigation)						
	Tonnes of carbon dioxide equivalent (t CO2eq) reduced as a result of Fund-funded projects/ programmes	Programme M&E Report	0 Mt CO2 eq.	1,939,426 MtCo2 eq.	3,232,377 MtCo2 eq.	Information will be aggregated at the sub-projects level
	Cost per t CO2eq decreased for all Fund-funded mitigation projects/ programmes	Programme M&E Report	0	US$ 13.5tCO2eq.	US$ 8.0	Calculated using Total project financing divided by Expected lifetime emission reductions overtime ($ 25.6M/3.2 M tons of CO2 eq.
Core level Indicators (Adaptation)						
	Total Number of direct andindirect beneficiaries (including external programme indirect beneficiaries)	Project M&E reports	0	186,360	372,720	Disaggregated at the firm, household and national levels
	Direct female beneficiaries	Project M&E reports	0	25,400	50,800	Computed at the firm and household levels
	Indirect male beneficiaries	Project M&E reports	0	16,400	36,000	Disaggregated at the firm's and household levels
	Indirect Beneficiaries (FI)	Project M&E reports	0	10	20	Bank staff trained
	External Indirect Beneficiaries	Project M&E reports	0	144,650	289,300	Customers and % of population that will benefit from improved

						processed and packaged food products from women-led MSMEs/FBAs
Fund-level Impacts (Mitigation)						
M1.0 Reduced emissions through increased low-emission energy access and power generation	1.1 Tonnes of carbon dioxide equivalent [t CO2eq] reduced or avoided as a result of Fund-funded projects/programmes - *gender-sensitive energy access power generation*	Programme M&E Reports	0 Mt CO2 eq.	1,939,426 MtCo2 eq.	3,232,377 MtCo2 eq.	Information will be aggregated at the sub-projects level
M4.0 Reduced emissions from land use	4.1 Tonnes of carbon dioxide equivalent (t CO2eq) reduced or avoided (including increased removals) as a result of Fund-funded projects/programmes – *land-use*	Programme M&E Reports	0 Mt CO2 eq	33,169.5 tons of CO2 eq	55,282.4 tons of CO2 eq	Information will be aggregated at the sub-projects level for land use changes
Fund-level Impacts (Adaptation)						
A1.0 Increased resilience and enhanced livelihoods of the most vulnerable people, communities and regions	1.2 Number of females benefiting from the adoption of diversified, climate-resilient livelihood options	Socioeconomic baseline and national household surveys and programmeM&E reports.	400 women – led MSMEs and FBAs	8,800.0 women	50,800.0women	Disaggregated at the firm and household levels.
A4.0 Improved resilience of ecosystems and ecosystem services	4.2 Value (US$) of ecosystem services generated or protected in	Baseline survey and programme M&E reports.	Progress report indicators ofthe area of	Per hectare net benefit of $196.0 for all program	$ 231,280 net benefitfor total Ha of area	Dollar values are estimated per hectare for increase in biodiversity

	response to climate change		land made more resilient as a result of CRA practices	beneficiaries[40]	expected to be covered by various CRA interventio n options	and soil biodiversity for various interventions. The per hectare value is aggregated **for** total Ha of area expected to be covered by various CRA intervention options

[40] This is the dollar equivalent of ecosystem services benefits derived from crop rotation, mixed cropping, improved nutrient management, improved genetic resources and minimum tillage. The benefits include reduction in soil erosion, increase in biodiversity, improvement in air quality, increased soil biodiversity and improvement in water availability (see economic model in the appendix).

H.1.2. Outcomes, Outputs, Activities and Inputs at Project/Programme level						
Expected Result	**Indicator**	**Means of Verification (MoV)**	**Baseline**	**Target**		**Assumptions**
				Mid-term (if applicable)	Final	
Mitigation/Adaptation						
Project/programme outcomes	**Outcomes that contribute to Fund-level impacts**					
M6.0 Increased number of small, medium and large low-emission power suppliers	6.1 Proportion of low-emission power supply provided (Solar PV and Biogas). Total capacity provided in MW	Programme M&E Report (mid-term and final)	NDC target of scaling up low-emission power supply national by 10%	9,946.57 MW installed capacity of Solar PV and Biogas provided for clean energy generation	9,946.57 MW installed capacity of Solar PV and Biogas provided for clean energy generation	Information will be aggregated at the sub-projects level for total installed capacity of Solar PV and Biogas
	6.2 Number of female households with improved access to low-emission energy sources		Baseline survey to determine access to low-emission energy sources in study area	At least 60% (240) of the targeted 400 female beneficiaries have improved access to biogas and Solar PV to generate clean and affordable energy	400 targeted female beneficiaries have improved access biogas and Solar PV to generate clean and affordable energy	Access to finance and acquired skills in the use of adoption technology are effectively used. Successful establishment of contracts with the suppliers of solar and biogas equipment made and effectively executed.
	6.3 MWh of low-emission energy generated as a result of GCF support		0	502,838.20 MWh of low-emission energy generated from Solar PV and Biogas	838,063.62 MWh of low-emission energy generate from Solar PV	Estimation is done for 70% of GCF co-financing allocated to Solar PV and Biogas technologies

					and Biogas	with annual full installed capacities of 10MW of Solar PV and biogas replacement of diesel.
M9.0 Improved management of land or forest areas contributing to emissions reductions	9.1 Hectares of land with newmanagement that contributes to CO2 emission	Programme M&E Reports	0	1,712Ha	1,712 Ha	The estimated land size holding for women-led MSMEs and FBAs are consistent with programme design and documented records
A5.0 Strengthened institutional systems for climate-responsive planning and development	5.1 Institutional systems that improve incentives for climate resilience and their effective implementation.	BoG Annual Financial Report, National Bureau of Statistics Annual Report and Program M&E Reports	Program baseline statistics on number of FIs that provide incentives for CRA and their effective implementation	At least 5 MDAs and 1 FI	More than15 MDAs and 4 FIs	FIs and MDAs are trained toimprove incentives for climate resilience planning and implementation
	5.2 Number key stakeholders in MDAs, local authorities and institutions sensitized on women & girls' rights to access to and control over land	Program M&E Reports	0	25	50	MDAs, local authorities and institutions are supportive and committed to improve women access to and control over land

	5.2 Number of female land reform legislators trained	Program M&E Reports	0	25	50	
	5.3 Total Number of female trainers trained to facilitate a collective access to land	Program M&E Reports	0	200	400	
A6.0 Increased generation and use of climate information in decision-making	6.2 Use of climate information products/services in decision-making in climate-sensitive sectors	Program M&E Reports, Climate Bulletin of the NDA in Ghana	Access to climate information is completely lacking in Ghana	200women-ledMSMEs and FBAs exposed to climate information for CRA practices	400women-ledMSMEs and FBAs exposed to climate information for CRA practices	Target beneficiaries are exposed to climate information for CRA practice and adoption
A7.0 Strengthened adaptive capacity and reduced exposure to climate risks	7.1 Number of vulnerable households using tools, instruments, strategies and activities to respond to climate change and variability	BoG statutory report, Ghana BoG and MoFA agricultural statistics and programme M&E documentation	Project indicators will be used to update baseline information	25,400 women and 16,800 males	50,800 women and 33,600 males	Assuming 100% of targeted women-led MSMEs and FBAs use tools, instruments, strategies and activities to respond to climate change and variability
Project/programme outputs	**Outputs that contribute to outcomes**					
Component 1: Line of Credit (LoC)for Women-owned Businesses in Climate Resilient Agricultural Activities						

1.1 Enhanced access to credit facilities for women-led MSMEs/FBAs and FIs for implementing CRA practices	1.1.1 Number of MSMEs receiving credits for CRA practices	Program M&E reports and records of loan allocation	0	200	400	LFIS GH is committed to channelling financing to target women-led MSMEs/FBAs engaged in CRA
	1.1.2 Number of FIs provided with LoC for CRA practices	BoG annual statistics and Program M&E reports	0	1	3 or more	
	1.1.3 Volume of loan allocated to women-led MSMEs/FBAs	FIs financial records on loans, allocation, BoGannual financial report	0	USD 29,375	USD 58,750	
Component 2: Technical Assistance (TA) for Development of Climate Resilience Agricultural Value Chain						
Sub-component2.1: Capacity building for CRA adoption practices and technologies uptake						
2.1400 women-led MSMEs and FBAs trained in the adoption of CRA technologies and practices	2.1.1 Number of women-led MSMEs and FBAs sensitized to enroll in index-based agricultural insurance schemes 2.1.2 Number of Training of Trainers' (TOT) trained on CRA adoption practices and technologies uptake. 2.1.3 Number of additional women in informal agric-business	Program M&E Reports and GIRSAL Annual Report	0	250 MSMEs/ FBAs 25 female ToT	400 MSMEs/ FBAs 50 female ToT	Women-led MSMEs/FBAs will put into practice the knowledge and skills gained through the TA for CRA measures

	ventures sensitized on benefits of SME registration			25 women	50 women	
Sub-component 2.2: Technical Assistance (TA) for LFIsand MSMEs/FBAs to support programme implementation						
2.2: 20 FI staff and 400 women-led MSMEs FBAs trained with knowledge and skills for implementing CRA activities and technology uptake	2.2.1 Number of women trained in proposal and business development plans	Program M&E Reports	0	200	400	Women are keen to acquire skills in proposaland business development training
	2.2.2 Number of LFIs staff trained on loan origination and appraisal targeting investmentsin CRA practices	Program M&E Reports	0	10	20	FI staff are committed to the knowledge and skills provided for achieving the intended programme deliverables
Sub-component 2.3: Technical Assistance for strengthening the regulatory framework for private sector investment in climate resilient agriculture						
2.3. 250 policy makers and 250 private sector investors equipped with knowledge and skills to 'crowd in' additional private sector investment into CRA practices	2.3.1 Number of staff in MDAs, local land institutions trained on agricultural land reforms to enhance women & girls' rights to access to and control over land	Program M&E Reports and GIRSAL Annual Reports	0	25	50	Policy makers & private sector investors will put into practice the knowledge and skills gains to support private sector investment into agriculture
	2.3.2 Number of of female land reform legislators trained	Program M&E Reports and GIRSAL Annual statistics	0	25	50	
	2.3.3 Number of agricultural input marketers trained	Program M&E Reports and MoFA Annual statistics	0	25	50	Input marketers will be committed to training

	2.3.4 Volume of co-financing leverage from the private sector to support investment in agriculture	Program M&E Reports, MoFA Annual Statistics, GIRSAL Annual Report	0	USD5 Million	USD 10 Million	Private sector investors are committed to investing in the agricultural value chain
Sub-component 2.4: Advocacy, knowledge Management and Outputs Dissemination						
2.4 Dissemination events completed and promotional materials disseminated to support policy and negotiations.	2.4.1 Total Number of program events held for promotional purposes	Program M&E Reports and AfDB Annual Reports,	0	3	5	Continues interest of target beneficiaries
	2.4.2 Number of policy briefs produced to disseminate program	Program M&E Reports,	0	10	20	4 produced per year
	2.4.3 Number of monographs produced to disseminate program outputs	Program M&E Reports, GIRSAL Annual Reports	0	2	5	1 per year
	2.4.4 Number of knowledge products generated	Program M&E Reports, GIRSAL Annual Reports	0	1	2	

Activities	**Description**	**Inputs[41]**	**Description**
Component 1: Line of Credit for Women-owned Businesses in Climate Resilient Agricultural Activities			
1. LoC to 400 women-led MSMEs/FBAs	AfDB is requesting for a US$18.5 million senior loan from the GCF in order to partner with LFIs to develop an inclusive loan product to enable women-lend MSMEs and FBAs finance climate resilient agricultural practices. Sub-loan products will be develop by women-led MSMEs and FBAs and screened for eligibility by LFIs.	US$23.5 million	Senior Loan from the GCF with a 15 years tenor

[41]Detailed budget breakdown of the activities by components are provided in the budget template.

	Eligible women-led MSMEs and FBAs will received a loan amount of up to USD 46,250 per MSMEs and FBAs. They are then entitled to receive technical assistance in the form of training to support sub-products implementation. Through this way, barriers tofinancing for MSMEs and FBAs engaged in CRA practices are reduced,and they strengthen their adaptive capacity to face the negative impact of climate change.		
Component 2: Technical Assistance for Development of Climate Resilience Agricultural Value Chain			
Sub-component 2.1: Capacity building for CRA adoption practices and technology uptake			
2.1 CRA capacity building and training workshop for CRA adoption practices and technologies uptake	Specifically designed to lay the ground work for programme implementation among women-led beneficiaries, This is basically to ensure that the targeted beneficiaries have the capacity to understand the programme objectives, selected CRA intervention options such as minimum tillage, processing, storage, packaging and marketing opportunities, CRA technology options such as solar irrigation and biogas, and fully understand the operationalization of the programme.	$150,000.0	5 capacity building workshops and training including local consultant hire (5),
Sub-component 2.2: Technical Assistance for LFIsand MSMEs/FBAs to support implementation of programme			
2.2TA supportfor FI, MSMEs and FBAs on programme implementation	This sub-component is targeted at training about 20 LFIs staff and 400 women-led MSMEs to support the full implementation of the programme. That is, from programme development to programme implementation and monitoring as highlighted in the FP. This TA will also target women-led MSMEs and FBAs to access GIRSAL products and services.	$1,050,000.0	2 IAs, 5 capacity building workshops and training including local consultant hire (5),
Sub-component 2.3: Technical Assistance for strengthening the regulatory framework for private sector investment in climate resilient agriculture			

2.3 TA support for regulatory framework strengthening	The legal and regulatory framework for attracting private sector investment into agriculture is currently very weak in Ghana. According to the 2017 World Bank's Enabling the Business of Agriculture (EBA)[42] report, reforms are needed to improve the quality and efficiency of regulatory systems that govern access to key agricultural factors such as seed, fertilizer, machinery, finance, markets, transport and information and communication technologies. The aim of this sub-component activity is designed to overcome some of these barriers by raising greater awareness among government Ministries, Department and Agencies (MDAs) on the need for institutional reforms targeted at 'crowding in' private sector investment into agriculture	$150,000.0	5 capacity building workshop targeting MDAs, local authorities land institutions and input marketers including local consultants hire and travels
Sub-component 2.4: Advocacy, knowledge Management and Outputs Dissemination			
2.4Advocacy and knowledge dissemination	The aim of this sub-component activity is to: a) raise greater awareness concerning the AFAWA programme initiative for potential replication and upscaling within and outside Ghana; b) support the development of gender strategy and policy based on programme outputs and outcomes; c) effectively manage lessons learned as well as knowledge generated from the programme design and implementation; and d) to widely disseminate the programme outputs/outcomes.	$150,000.0	Advocacy and dissemination workshops, local consultant hire and travel

[42]Asare, R., and G. O. Essegbey. 2016. Funding of Agricultural Research and Development in Ghana: The case of the Council for Scientific and Institutional Research (CSIR). Science and Technology Policy Institute, Accra, Ghana: Technology and Investment 2016, 7. Pp40–50

H.2. Arrangements for Monitoring, Reporting and Evaluation

Besides the arrangements (e.g. semi-annual performance reports) laid out in AMA, please provide project/programme specific institutional setting and implementation arrangements for monitoring and reporting and evaluation. Please indicate how the interim/mid-term and final evaluations will be organized, including the timing.

Programme Monitoring

Programme monitoring will occur in two phases namely technical and financial. At the technical end**,** a series of key performance indicators and project operational manual (POM) which will be prepared by the PMU within GIRSAL Limited shortly after Project loan approval. MOF will have an oversight role and monitor all operations for planning and facilitation purposes. The PMU will monitor and evaluate overall impact of the Project including environmental and social compliance and performance and compile the Project's half year (first year and quarterly thereafter) and annual reports for dissemination to the AfDB, MOF, and relevant line ministries. A mid-term review (MTR) will be undertaken two years after Project start to review the Project's achievements and constraints. Similarly, upon completion of project investments at the end of program year four, the PMU will prepare a Borrower's project completion report. At the financial end, **the project will be** monitored by the AfDB's Portfolio Management team as per the relevant internal policies and procedures. The AfDB – as the accredited executing agency – will be responsible for direct monitoring of implementation conditions and reporting periodically to the GCF under the terms to be agreed between the AfDB and GCF. Thus, all projects financed under the proposed framework will comply with the AfDB appraisal, approval, monitoring and supervision standards and procedures involving representatives or all relevant teams.

Project Reporting

There will be a two-line reporting procedure. First, project feedback to AfDB from GIRSAL and programme beneficiaries, will be in line with the standard loan agreement, and the AfDB will conduct a bi-annual supervision. Secondly, reporting of AfDB to GCF will comply with the relevant GCF policies (as specified under the AMA) in reporting and evaluation arrangements for this framework. The AfDB will provide the annual performance report (APR) to the GCF during the five-year implementation period. In addition, during the sub-loan lifetime, semi-annual activity report on the status of the GCF-financed individual sub-projects will be provided. For the TA component, reports from the beneficiaries will be consolidated by the AfDB for reporting to the GCF. In addition, following the arrangement under the AMA and the FAA, inception report, mid-term and final evaluation reports, and financial information reports (semi-annually throughout the life of the loan) will be submitted.

Programme Evaluation

As per all AfDB-GCF programmes, the evaluation arrangements for this AFAWA programme will comply with the related AfDB and GCF policies. Both the independent mid-term and final evaluation will be carried out by the AfDB's independent evaluation unit (IDEV). The work of the AfDB's independent evaluation work is guided by internationally accepted principles for the evaluation of development assistance, in particular, the Organization for Economic Co-operation, and Development Assistance Committee (OECD DAC) evaluation guiding principles, and the good-practice standards issued by the Multilateral Development Banks' Evaluation Cooperation Group (ECG).

Please provide methodologies for monitoring and reporting of the key outcomes of the project/programme.

** Please note that a funding proposal will be considered complete only upon receipt of all the applicable supporting documents.*

I. Supporting Documents for Funding Proposal

☒	NDA No-objection Letter
☒	Feasibility Study
☒	Integrated Financial Model that provides sensitivity analysis of critical elements (xls format, if applicable)
☐	Confirmation letter or letter of commitment for co-financing commitment (If applicable)
☐	Project/ProgrammeConfirmation/Term Sheet (including cost/budget breakdown, disbursement schedule, etc.) – *see the Accreditation Master Agreement, Annex I*
☒	Environmental and Social Impact Assessment (ESIA) or Environmental and Social Management Plan (If applicable)
☒	Appraisal Report or Due Diligence Report with recommendations (If applicable)
☒	Evaluation Report of the baseline project(If applicable)
☒	Map indicating the location of the project/programme
☒	Timetable of project/programme implementation

REPUBLIC OF GHANA

MINISTRY OF FINANCE

In case of reply, the
number and date of this

Our Ref: MOF/ESRD/NREC/GCF VOL.IV
Your Ref:
Tel No:

13TH FEBRUARY, 2019

Dear Mr. Javier Manzanares

RE: FUNDING PROPOSAL FOR THE GCF BY AFRICAN DEVELOPMENT BANK REGARDING PROGRAM ON AFFIRMATIVE FINANCE ACTION FOR WOMEN IN AFRICA (AFAWA): FINANCING CLIMATE RESILIENT AGRICULTURAL PRACTICES IN GHANA

We refer to the Programme on Affirmative Finance Action for Women in Africa (AFAWA): Financing Climate Resilient Agricultural Practices in Ghana as included in the funding proposal submitted by African Development Bank to Ministry of Finance in December, 2018.

2. The undersigned is the duly authorized representative of the Ministry of Finance, the National Designated Authority/focal point of the Republic of Ghana.

3. Pursuant to GCF decision B.08/10, the content of which we acknowledge to have reviewed, we hereby communicate our **no-objection** to the Program on "Affirmative Finance Action for Women in Africa (AFAWA): Financing Climate Resilient Agricultural Practices in Ghana" as included in the funding proposal.

4. By communicating our no-objection, it is implied that:

(a) The Government of the Republic of Ghana has no-objection to the Program on Affirmative Finance Action for Women in Africa (AFAWA): Financing Climate Resilient Agricultural Practices in Ghana as included in the funding proposal;

(b) The Program on Affirmative Finance Action for Women in Africa (AFAWA): Financing Climate Resilient Agricultural Practices in Ghana as included in the funding proposal is in conformity with the Republic of Ghana's national priorities, strategies and plans; and

(c) In accordance with the GCF's environmental and social safeguards, the Program on Affirmative Finance Action for Women in Africa (AFAWA): Financing Climate Resilient Agricultural Practices in Ghana as included in the funding proposal is in conformity with relevant national laws and regulations.

5. We also confirm that our national process for ascertaining no-objection to the Program on Affirmative Finance Action for Women in Africa (AFAWA): Financing Climate Resilient Agricultural Practices in Ghana as included in the funding proposal has been duly followed.

6. We also confirm that our no-objection applies to all projects or activities to be implemented within the scope of the programme.

7. We acknowledge that this letter will be made publicly available on the GCF website.

8. Kind regards,

DR. ALHASSAN IDDRISU
DIRECTOR, ESRD
NDA FOCAL POINT
***FOR*: MINISTER**

Mr. Javier Manzanares
The Executive Director
Green Climate Fund ("GCF")
G-Tower, 24-4 Songdo-dong, Yeonsu-gu Incheon City,
Republic of Korea.

Cc: The Hon. Minister, MoF
The Hon. Deputy Minister, MoF
The Chief Director, MoF
The Chief Director, MoGCSP
The Chief Director, MoFA

Environmental and social safeguards report form pursuant to para. 17 of the IDP

Basic project or programme information	
Project or programme title	Program on Affirmative Finance Action for Women in Africa (AFAWA): Financing Climate Resilient Agricultural Practices in Ghana
Existence of subproject(s) to be identified after GCF Board approval	Yes
Sector (public or private)	Private
Accredited entity	African Development Bank (AfDB)
Environmental and social safeguards (ESS) category	Category I-2
Location – specific location(s) of project or target country or location(s) of programme	Republic of Ghana
Environmental and Social Impact Assessment (ESIA) (if applicable)	
Date of disclosure on accredited entity's website	N/A
Language(s) of disclosure	N/A
Explanation on language	N/A
Link to disclosure	N/A
Other link(s)	N/A
Remarks	N/A
Environmental and Social Management Plan (ESMP) (if applicable)	
Date of disclosure on accredited entity's website	N/A
Language(s) of disclosure	N/A
Explanation on language	N/A
Link to disclosure	N/A
Other link(s)	N/A
Remarks	N/A
Environmental and Social Management (ESMS) (if applicable)	
Date of disclosure on accredited entity's website	Wednesday, June 5, 2019
Language(s) of disclosure	English
Explanation on language	Official Language of the Republic of Ghana
Link to disclosure	https://www.afdb.org/fileadmin/uploads/afdb/Documents/Environmental-and-Social-Assessments/ESMS-_AFAWA_Program-Ghana.pdf
Other link(s)	N/A
Remarks	N/A
Any other relevant ESS reports, e.g. Resettlement Action Plan (RAP), Resettlement Policy Framework (RPF), Indigenous Peoples Plan (IPP), IPP Framework (if applicable)	
Description of report/disclosure on accredited entity's website	Wednesday, June 5, 2019
Language(s) of disclosure	English
Explanation on language	Official Language of the Republic of Ghana

Link to disclosure	https://www.afdb.org/fileadmin/uploads/afdb/Documents/Environmental-and-Social-Assessments/ESMS-_AFAWA_Program-Ghana.pdf
Other link(s)	N/A
Remarks	The ESMS includes an RPF.
Disclosure in locations convenient to affected peoples (stakeholders)	
Date	Wednesday, June 5, 2019
Place	A copy of the ESMS has been made available in the offices of some of the stakeholders to be involved in the AFAWA program. This includes: * • Association of Ghana Industries (AGI) • Vegetable Producers and Exporters Association of Ghana (VEPEAG) • Ghana Association of Women Entrepreneurs (GAWE) • Ghana Micro Finance Institutions Network (GHAMFIN) • National Board for Small Scale Industries (NBSSI) • African Agribusiness Incubators Network (AAIN). • Ministry of Food and Agriculture (MOFA) • Ministry of Gender, Children and Social Protection (MGCSP) • Energy Commission (EC) • Ministry of Energy (MOE) • Women in Agriculture Development (WIAD) During project implementation and when potential beneficiaries of the loan facility have been identified, hard copies of the ESMS will also be disclosed at the facilities or offices of the identified MSMEs and Farmer-Based Associations.
Date of Board meeting in which the FP is intended to be considered	
Date of accredited entity's Board meeting	October 2019
Date of GCF's Board meeting	Saturday, July 6, 2019

Note: This form was prepared by the accredited entity stated above.

*Subsequent to the disclosure of this form to the Board and active observers on 5 June 2019, the following minor change has been made to the ESMS: Reference to "Ecobank Ghana" has been replaced with "local financial institutions including Ecobank Ghana" to make the programme more inclusive. Hence, "Ecobank Ghana" has been removed from this list.

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Independent Technical Advisory Panel's assessment of FP114

Proposal name:	Program on Affirmative Finance Action for Women in Africa (AFAWA): Financing Climate Resilient Agricultural Practices in Ghana
Accredited entity:	African Development Bank (AfDB)
Project/programme size:	Small

I. Assessment of the independent Technical Advisory Panel

1.1 Impact potential *Scale: Medium*

1. The funding proposal considers implementation of the "Program on Affirmative Finance Action for Women in Africa (AFAWA)". AFAWA was developed by the African Development Bank (AfDB) to implement measures identified as gaps in the ongoing "Ghana Incentive-Based Risk-Sharing System for Agricultural Lending Project" (GIRSAL) programme, also supported by AfDB. It aims to mobilize financial resources for climate-resilient agriculture through a risk sharing financing mechanism developed by AfDB for realization of its "Feed Africa Strategy".

2. The GIRSAL risk sharing financial mechanism consists of: a credit guarantee scheme; an agricultural insurance facility; a technical assistance facility; and a digital finance platform[1] to facilitate broader access to financial products and services for the agricultural sector. Gaps identified through GIRSAL and targeted by AFAWA are:

(a) Absence of measures ensuring that women-led micro, small and medium-sized enterprises (MSMEs) and farmer-based associations (FBAs) that do not have equal access to credit can also benefit from this innovative risk sharing mechanism; and

(b) Absence of actions to address the vulnerabilities of agro-ecosystems, communities and agricultural yields to climate change risks and uncertainties.

3. A local financial institution (LFI) that has yet to be selected will be the local partner and co-executing entity of AfDB for implementation of the risk sharing financing mechanism in the agriculture sector for special target groups in component 1. The LFI selection criteria are as follows:

(a) The LFI must be a banking or financial company authorized to provide loans and duly incorporated and licensed in the host country;

(b) The LFI must comply with the accredited entity (AE) selection (including financial strength and credit risk), compliance and eligibility policies and procedures;

(c) The LFI must have sufficient internal procedures to be able to implement the funded activity with technical assistance;

(d) The LFI must be capable of complying with the procurement procedures of the AE;

[1] Digital Finance Platform: the GIRSAL cloud-based platform that would facilitate GIRSAL reporting and development of predictive models.

(e) The LFI must have anti-money-laundering and countering the financing of terrorism as well as environmental and social safeguards policies that are satisfactory to the AE;

(f) The LFI must have a track record in MSMEs and agriculture lending;

(g) The LFI must be committed to climate finance and agriculture lending to women-led MSMEs and FBAs; and

(h) The LFI has signed a master agreement with GIRSAL.

4. Among the LFIs under consideration by AfDB, Ecobank Ghana Limited (Ecobank) has signed and submitted a letter of intent, as provided in annex 3 to the funding proposal, and is currently the target bank. Ecobank is in the process of being accredited to GCF as a direct access entity. AfDB will finalize the selection of the LFI before the execution of the funded activity agreement.

5. AFAWA is small-scale, cross-cutting funding proposal contributing to the GCF result areas: energy access and power generation; forestry and land use; most vulnerable peoples and communities; and ecosystem and ecosystem services. The financial support requested by the AE from GCF is USD 20 million, from which USD 18.5 million (92.5 percent of GCF finance) is a senior loan that will be used to develop the local currency loan product to on-lend to women-led MSMEs/FBAs interested in climate-resilient agriculture practices. The remaining USD 1.5 million of the GCF budget will be grant financing to support capacity-building for the selected LFI and women-led MSMEs/FBAs as well as programme management for identification of investment opportunities and pipelines within various commodity value chains. An in-kind contribution of USD 0.6 million (3 per cent of the total project budget) will be provided by AfDB. After the selection of the LFI, it is expected that USD 5 million will be co-financed by the co-executing LFI. The expected total project budget should be USD 25.6 million.

6. Though AfDB is not providing direct co-financing to the AFAWA project, it will provide USD 14.1 million in financing to capitalize the risk sharing facility of the GIRSAL programme that the AFAWA funding proposal seeks to complement with climate-resilient measures for agriculture and enhancing gender finance in Ghana. The GIRSAL risk sharing facility will provide partial guarantees for credit risk for subloans issued through the AFAWA credit line. AfDB will assist in the development of this loan product to finance climate-resilient measures for agricultural practices.

7. The funding proposal consists of three components: a credit line for women-owned businesses in climate-resilient agricultural activities and technical assistance for development of climate-resilient agricultural value chains. The components involve the following:

(a) Component 1: loan pricing and product development; appraisal by the bank subprojects and relevant loan origination; loan disbursements through the bank; management of loan repayment by the women-led MSMEs and FBAs; and loan reflow from the bank to GCF through AfDB;

(b) Component 2: capacity-building for the uptake of climate-resiliant agriculture practices and technologies; technical assistance for the selected LFI and MSMEs to support implementation of the programme; technical assistance to governmental structures for strengthening the regulatory framework for private sector investment in climate-resilient agriculture; and advocacy, knowledge management and outputs dissemination; and

(c) Component 3: programme management by AfDB.

8. The greenhouse gas (GHG) emission baseline scenario considered in the funding proposal is a business as usual (BAU) scenario from Ghana's nationally determind contribution (NDC), which estimates an increase in emissions from 19.53 million tonnes of carbon dioxide

equivalent ($MtCO_2eq$)[2] (excluding Agriculture, Forestry and Other Land Uses (AFOLU)) in 2010 to 73.95 MtCO2eq (excluding AFOLU) in 2030. It should be highlighted here that, according to Ghana's National Inventory Report in 2012, the AFOLU sector contributed 45 per cent to the total country's emissions. Further, the funding proposal mainly planned emission reduction and adaptation measures in this important sector for the country, and, in particular, in leading subsectors of the AFOLU sector, such as "agregated sources and non-CO_2 emission sources from land". This covers biomass burning, direct and indirect nitrus oxide emissions from managed soils, and indirect nitrogen emissions from manure management.

9. This is a funding proposal with a cross-cutting contribution covering both mitigation and adaptation activities, with 70 per cent of the GCF budget allocation in mitigation and 30 per cent in adaptation. Furher details include:

(a) **Mitigation impact.** Three types of mitigation activities are planned for the project:

(i) Avoidance of 105,629 tCO_2eq of methane emissions annually from livestock manure;

(ii) Production of clean energy from solar energy (photovoltaic installations) and reduction of GHG emissions by 7,177 tCO_2eq annually from avoiding diesel generated power consumption; and

(iii) Reduction of around 2,211 tCO_2eq annually from land management through implemanting climate-resiliant sustainable land management practices. Co-financed funds will be used for strengthening activities in this subsector.

The total annual emission reduction from these three activities at this stage, as calculated in a very rough and conservative[3] manner, equal 129,295 tCO_2eq, which contributes a 0.2 per cent reduction to the NDC, BAU projection for 2030;

(b) **Adaptation impact.** Approximately 1,712 hectares of agricultural land will be adapted to ongoing climate changes through implementation of sustainable land management practice, such as: minimum tillage, crop rotation, mixed cropping, improved genetic resources, and integrated nutrients. As a result of these activities, along with an increase in the annual yield of selected crops, an improvement in water availability, a reduction in soil erosion, an increase in soil biodiversity, an increase in biodiversity, a reduction in GHG emissions, and an increase in social and political capital are expected; and

(c) **From both adaptation and mitigation measures.** Four hundred women-led MSMEs and FBAs should benefit from the programme, with total direct beneficiaries of about 50,800 people (8,800 females at the firm level and about 42,000 family members at the female employee household level). Additionally, 33,600 males (5,600 at the firm level and 28,000 family members at the male employee household level) are projected as indirect beneficiaries of the programme. Finally, over 20 LFI staff will get on-the-job training in financing of climate change technologies and activities. Total number of direct and indirect beneficiaries including service providers and population who will benefit from food products is expected to reach 373,720.

10. The impact potential of the funding proposal is expected to be high for several reasons: improved access to loans in local currency, removing the currency exchange risk for MSMEs and

[2] There are some small differences in the amount of 2010 GHG emissions provided in different documents. For example, Ghana's biennial updated report, published in 2015, shows emissions from 2010 without AFOLU lower than figures provided in the NDC/funding proposal, and equaling 14.67 $MtCO_2eq$ (this figure is closer to the 2012 value in the biennial updated report). The national inventory report, also published in 2015, shows that emissions in 2010 without AFOLU equaled 15.75 $MtCO_2eq$. However, emission figures applied for this assessment report are the same as in Ghana's NDC and in the funding proposal.

[3] For example, diesel generated power substitution by PV-generated power is not reported in total reduction

local FBAs; strengthened capacity of a local bank through on-the-job training; women-led MSMEs receiving access to loans, clean energy and knowledge in sustainable land management practices; and increased income and decreased workloads for women-led MSMEs.

11. When assessing the impact of the programme, it is important to highlight that this funding proposal plans activities and measures in AFOLU subsectors such as agricultural residues and sustainable management of agricultural lands, which are among the most complicated sectors for implementation in developing countries because they include significant social problems (poverty, literacy, knowledge and technology uptake). Technology transfer in agricultural land management processes is challenging because adaptation of best practices to local circumstances and climates is not always successful.

12. Biogas installations are also considered risky in cases involving small farmers (see section 1.6 on efficiency and effectiveness). While the impact potential of the funding proposal is expeced to be high if successful, the independent Technical Advisory Panel (TAP) takes into consideration that the planned activities tackle complicated sectors and include highly risky technologies. Therefore, the impact potential is scored as "medium". Moreover, the sample subprojects have not been provided at this stage in the submission process.

1.2 Paradigm shift potential *Scale: Medium*

13. The funding proposal includes several activities that could bring transformational changes in development of the agriculture sector in Ghana. In particular:

(a) Taking the climate change component into consideration when planning agriculture and rural development is not yet customary in developing countries' when planning policy;

(b) Providing equal access to financial sources and markets for women, even if they are leaders, is still not a BAU situation worldwide;

(c) Sustainable management of agricultural lands is a challenge requiring good knowledge of relevant technologies, and best practices don't have a high potential for replicability because of the local nature of ecosystems; and

(d) Establishing loan products in local currency is not typical in the banking sector in developing countries, and successful results have high potential for replication.

14. Photovoltaic installations have high potential for replication but biogas installations and sustainable management practices in land use have limited replication potential because they very much depend on local circumstances and the designs of projects.

15. Taking into consideration the risks considered in this section, and under the criteria "impact assessment" and "efficiency and effectiveness", the expected transformation changes have been scored as "medium to high" in the case of the successful implementation of the particular components listed in this section.

1.3 Sustainable development potential *Scale: High*

16. Measures offered by the funding proposal will equally contribute to economic, social and environmental pillars of sustainable development:

(a) **Economy:** by making available loans in local currency; providing concessional loans, facilitating technology transfer processes at the MSME level; providing awareness raising for supporting women-led MSMEs and FBAs in identification of new income generation activities other than BAU cases;

(b) **Social:** by targeting women-led MSMEs and FBAs and contributing to gender equality, the programme improves access to power; and

(c) **Environment:** through improving biodiversity and land quality.

17. Ghana plays a leadership role, especially in Africa, for attainment of the Sustainable Development Goals (SDGs) on the continent. This particular project contributes to the following SDGs:

(a) SDG 1 (no poverty):

(i) Target 1.4: by 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance; and

(ii) Target 1.5: by 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters;

(b) SDG 5 (gender equality), target 5.a: undertake reforms to give women equal rights to economic, as well as access to ownership and control over land and other forms of property, financial services, inheritance and natural resources, in accordance with national laws;

(c) SDG 7 (affordable and clean energy), target 7.2: by 2030, increase substantially the share of renewable energy in the global energy mix;

(d) SDG 8 (decent work and economic growth):

(i) Target 8.2: achieve higher levels of economic productivity through diversification, technological upgrading and innovation, including through a focus on high-value added and labour-intensive sectors;

(ii) Target 8.3: promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of MSMEs, including through access to financial services;

(iii) Target 8.4: improve progressively, through 2030, global resource efficiency in consumption and production and endeavour to decouple economic growth from environmental degradation, in accordance with the 10-year framework of programmes on sustainable consumption and production, with developed countries taking the lead;

(iv) Target 8.5: by 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value; and

(v) Target 8.10: strengthen the capacity of domestic financial institutions to encourage and expand access to banking, insurance and financial services for all;

(e) SDG 10 (reduced inequalities), target 10.b: encourage official development assistance and financial flows, including foreign direct investment, to States where the need is greatest, in particular least developed countries, African countries, small island developing States and landlocked developing countries, in accordance with their national plans and programmes;

(f) SDG 12 (responsible consumption and production):

(i) Target 12.2: by 2030, achieve the sustainable management and efficient use of natural resources;

(ii) Target 12.3: by 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, *including post-harvest losses*;

(iii) Target 12.5: by 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse;

(iv) Target 12.8: by 2030, ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature; and

(v) Target 12.a: support developing countries to strengthen their scientific and technological capacity to move towards more sustainable patterns of consumption and production;

(g) SDG 15 (life on land):

(i) Target 15.6: promote fair and equitable sharing of the benefits arising from the utilization of genetic resources and promote appropriate access to such resources, as internationally agreed; and

(ii) Target 15.a: mobilize and significantly increase financial resources from all sources to conserve and sustainably use biodiversity and ecosystems; and

(h) SDG 13 (climate action) is the main target of the project. A specific contribution from the project is expected for:

(i) Target 13.1: strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries.

1.4 Needs of the recipient *Scale: High*

18. The needs of Ghana are well demonstrated in the country's NDC along with its commitments to GHG mitigation and adaptation. Based on its national circumstances, Ghana has put forward adaptation as well as mitigation commitments in its NDC. The funding proposal will contribute to several aspects of the country's financial, capacity and technology needs as identified in its NDC:

(a) **Financial needs.** The NDC states that 31 different programmes (20 for mitigation and 11 for adaptation) have been identified by the country to drive the "10 years post-2020 enhanced climate change action plan" of Ghana. Domestic and international investments of USD 22.6 billion are required to realize this action plan. Approximately USD 6.3 billion (28 per cent) is expected to be mobilized by the country itself while USD 5 billion (30 per cent of the total international support required for programmes) is expected from GCF during the 10 years of the plan's implementation;

(b) **Capacity and technology needs.** The NDC also states that without a strong technology transfer process or getting full access to the required adaptation and mitigation technologies as well as the technical capacities and favourable conditions that stimulate innovation, Ghana will not have the capacity to fully implement its NDC. In this regard, Ghana will be looking for international partners to take advantage of the opportunities for technology development and transfer and continuous enhancing of skills, especially in the priority NDC sectors; and

(c) **Equitable social development.** Three key programmes contribute to equal social development: managing climate-induced health risks; integrated water resources

management; and resilience for gender and vulnerable groups. These have been planned in the NDC as adaptation actions.

19. Ghana's GHG profile is mainly dominated by emissions from the Land Use, Land-Use Change and Forestry sector, which accounts for more than 53 per cent of the total emissions in Ghana. According to the NDC document, under the unconditional mitigation goal, emissions are commited to be limited by 15 per cent relative to the BAU scenario by 2030. Ghana states that an additional 30 per cent of anticipated BAU emissions by 2030 could be limited if external support were available to cover the full cost of implementation (finance, technology transfer, capacity-building), leading to 45 per cent of emissions being limited.

20. Rainfall conditions, mishaps and construction of new plants have influenced Ghana's power generation trends by 9 per cent.[4] Ghana's electricity penetration reached 76 per cent by 2015, the second highest in Sub-Saharan Africa. In the same period, the total installed capacity included: hydro at 49.9 per cent; thermal at 49. 8 per cent; and renewables (solar on-grid and off-grid, and biomass) at -0.3 per cent (8.2 megawatts). The impact of climate change during dry seasons is characterized by frequent power outages. The situation is critical, especially in the savannah zone where energy access is below the national average and the reliability of the power system is unfortunately very disappointing. For this reason, several households and enterprises have resorted to the use of diesel-based generators, firewood and charcoal for cooking and processing of agro-products.

21. Sustainable land management and, in particular, agriculture and food security, is the first priority among the planned adaptation measures.

1.5 Country ownership *Scale: High*

22. As it was already mentioned above, the AFAWA programme was developed to close the gaps identified by the GIRSAL programme and strengthen the gender and climate change components of GIRSAL by ensuring the equitable participation of women-led MSMEs and FBAs in risk-sharing financing schemes offered by GIRSAL. GIRSAL is a joint programme of the Government of Zimbabwe and AfDB (the AE), developed within the AfDB project for African countries that aims to establish a risk-sharing financing mechanism for small and vulnerable households and farms interested in climate change adaptation and mitigation technologies and knowledge. The Government of Ghana, as a leader of the "Feed Africa Strategy" programme, has mobilized USD 65 million for the GIRSAL programme. This demonstrates high country ownership of the AFAWA programme as well.

23. The funding proposal clearly demonstrates that all activities considered in the AFAWA programme are in line with three (out of seven) priority sectors identified by the country in its NDC, namely: sustainable land use including food security; equitable social development; and sustainable energy security. The activities planned in the funding proposal contribute first to equitable social development, followed by sustainable land use. Scaling up renewable energy penetration by 10 per cent by 2030 and promoting clean rural household lighting are among the 20 mitigation programmes considered in Ghana's NDC, and they are also where the funding proposal contributes.

24. Ghana's high interest in increasing the renewables mix for its energy generation and consumption is expressed in different acts and programmes as well as the consessions

[4] Business Opportunities for Renewable Energy in Ghana. Available at <https://www.rvo.nl/sites/default/files/2016/05/Business%20opportunities%20for%20Renewable%20Energy%20in%20Ghana.pdf>.

approved by the Government in support of renewable energy development, which confirm the country's high interest in the renewable energy component of the project.

1.6 Efficiency and effectiveness *Scale: Medium*

25. Risks identified by the independent TAP:

(a) **Co-financing**. Co-financing for the AFAWA project is not confirmed at this stage but will be conditional on the selection of an LFI and should be finalized before the execution of the funded activity agreement, which lowers the score for this criterion;

(b) **Dependence from GIRSAL.** The efficiency and effectiveness of this funding proposal significantly depends on the efficiency and effectiveness of the GIRSAL programme as GIRSAL is practically a back up to the AFAWA project, providing a risk sharing facility and additional training. GIRSAL has just been initiated and, therefore, it's not possible at this stage to confirm the high efficiency and effectiveness that potentially could be achieved by AFAWA, as a branch of GIRSAL;

(c) **High risk of biogas installations.** The high efficiency of the mitigation component of the AFAWA project also depends on the successful application of biogas technology among the MSMEs and FBAs. Based on preliminary calculations, the highest emission reduction expected from generation and utilization of biogas (avoidance of methane) in the project is around 82 per cent. During the independent TAP interaction with the AE, an overview of biogas development in Ghana was provided. In the overview, the AE explained the main reasons this technology fails in the initial stages, but the AE also informed that a recent study of 50 biogas plants in Ghana indicated that about 44 per cent are currently in operation. The selection criteria and, in particular, correct identification of the most effective locations for biogas installation are crucial for the successful immplementation of this technology. As this stage's subproject selection criteria has not been provided, the TAP is not in a position to confirm that there will be high results in biogas generation and utilization. Measures to be taken by GCF to identify risk reductions are reflected in the conditions for approval;

(d) **Monitoring of co-financing**. The independent TAP is of the opinion that there is a risk in not getting the desired co-financing amount and/or if co-financing is directed to the business-as-usual sub-loans instead of the risky agricultural activities targeted by the funding proposal. If the co-financing is not received, the effectiveness of the funding proposal will decrease, but there will still be parallel financing from AfDB which is the risk sharing facility of GIRSAL. Regarding the concern of the independent TAP on ensuring implementation of the targeted activities of the funding proposal under co-financed sub-loans, the independent TAP recommends that the Secretariat ensure relevant monitoring activities for the deliverables of such sub-loans.

26. Contribution from the funding proposal:

(a) The cost for the emission reduction, based on the 70 per cent (USD 10.5 million) of GCF budget allocated for the mitigation, equals USD 5.4/tCO_2eq for a 15-year period. If the adaptation co-benefits from some of these actions are taken into consideration, then the costs should be lower. As about 92.5 per cent of the GCF finance is in the form of a loan, the project efficiency, from this perspective, seems very high;

(b) A high impact is expected from the on-the-job training for the selected LFI, which could benefit greatly from participation in the AFAWA project as a co-executing entity of AfDB. This could also give the selected LFI the opportunity to become accredited by GCF as a direct access entity, if the LFI so wishes.. As mentioned above, one of the candidate LFIs, ECOBANK, is in the process of being accredited to GCF as a direct access entity;

(c) Because the AFAWA project's target group is women-led MSMEs and FBAs, this funding proposal could become a high contributor to implementation of the GCF Gender Policy;

(d) An important risk-reduction effect for the final recipients could be gained from the availability of loans in local currency, which is a big problem in many developing countries, and, from intensive training for the successful technology transfer component.

27. In summary, the risks identified during the assessment and listed in this section compared with the expected contribution of this funding proposal have led the independent TAP to score the efficiency and effectiveness criterion as "medium".

II. Overall remarks from the independent Technical Advisory Panel

28. The independent TAP considers that the concept provided in the AFAWA funding proposal is fully in line with GCF policies, but, in order to ensure high impact and effectiveness of implementation, TAP recommends the funding proposal for approval by the Board subject to the following condition:

(a) Prior to the first disbursement of funds by GCF under the funded activity agreement, the AE shall deliver, in a form and substance satisfactory to the Secretariat:

(i) An operational manual, developed by the selected LFIs and approved by the AE, and in a form and substance satisfactory to the Secretariat, for implementation of the GCF programme and any other climate change-related projects implemented by the selected LFIs in the targeted sector, including the following:

1. Selection criteria of subsectors and eligibility criteria (e.g. minimum expected impacts in GCF result areas, minimum expected socio-economic benefits, minimum co-financing ratios, final beneficiaries, minimum requirements to technology to be implemented, among others) for the selection of subprojects in each targeted subsector;
2. A proposal selection process, including a criteria scoring system and decision-making procedure for approval of subprojects;
3. Methodologies for calculation of GHG emission reductions by technologies planned to be implemented, for monitoring and impact measurements;
4. A feasibility study on sector-related climate change rationale, needs of final beneficiaries in respect of technologies knowledge transfer, finance and market, among others; and
5. An indicative pipeline of subprojects; and

(ii) A training programme in relation to the activities to be implemented under component 2, developed by the selected LFIs and approved by the AE, in a form and substance satiasfactory to the Secretariat and based on the studies conducted for the proposed programme on the gaps and barriers analysis. The training programme shall include:

1. Training material for the selected LFIs and the final beneficiaries (MSMEs/FBAs); and
2. An implementation plan detailing the training provider institutions, responsibilities and results to be achieved.

Reply to the Independent Technical Advisory Panel assessment findings (FP 114)

Proposal name: Program on Affirmative Finance Action for Women in Africa (AFAWA): Financing Climate Resilient Agricultural Practices in Ghana

Accredited entity: African Development Bank (AfDB)

Impact potential
Thank you for the positive review. No further comments
Paradigm shift potential
Thank you for the positive review. No further comments
Sustainable development potential
Thank you for the positive review. No further comments
Needs of the recipient
Thank you for the positive review. No further comments
Country ownership
Thank you for the positive review. No further comments
Efficiency and effectiveness
Thank you for the positive review. No further comments
Overall remarks from the independent Technical Advisory Panel: Thank you for your recommendation. We are taking care of them.

GENDER ANALYSIS AND SOCIAL INCLUSION IN GHANA

I. GENERAL GENDER ANALYSIS

The Gender Africa Index 2019 ranked Ghana 20th out of 51 countries, reflecting the discrimination embedded in customary laws, social norms and practices and by inappropriate legal protection against gender discrimination in all dimensions of social institutions. Restrictive social norms and stereotypes continue to be the biggest barriers to gender equality and women's empowerment in the country.

I.1. Legal framework and institutional mechanisms for gender machinery in Ghana

The Government of Ghana has made great progress in improving the legal frameworks for promoting gender equality and women's empowerment through the 1992 Constitution and other national laws. The Government of Ghana has also ratified various international conventions, protocols and agreements, but considerable gaps remain. Particularly in areas such as women's access to finance, land and other productive resources, participation in decision-making and harmful traditional practises. Also, the main challenges in implementation of the international laws and treaties on gender equality and women's empowerment include: competing government priorities and political will; weak gender mainstreaming coordinating role of the Ministry; conceptual clarification of gender equality in the public sector, lack of effective monitoring and evaluation systems and practice within the sector machinery and weak accountable governance.

In Ghana, one of the main challenges to the effectiveness of sector policies and plans is that they are not strictly linked to budget allocations. The National Gender Policy (2015) is an example, as the main challenge to the implementation seems to be the lack of funds. Another challenge is the absence of any multi-sector coordination mechanism to ensure that this policy is implemented within all sectors. This process should be coordinated by the Ministry of Gender, Children and Social Protection (MoGCSP) and monitored by the Gender Desks appointed in all Ministries, but these gender desks do not have the necessary capacities, budget and position decisional power to mainstream gender in their sectors. Further, the MoGCSP Department of Gender (responsible for coordinating and monitoring them) is unable to ensure the necessary follow-up because of its institutional weakness. As such, the contribution of sector policies and plans to gender equality is not adequately monitored and evaluated.

I.2 Governance and participation of women in decision-making positions

Few women participate in politics, public life and formal decision-making and this has further diminished the voice and interests of women in public governance. Ghana is currently ranked 72nd on the most recent Global Gender Gap Index (2017) and 112th when it comes to Political Empowerment. The proportion of women's seats in parliament is currently 12.7% (35 seats out of 275) as of 2018, showing a very modest progress in the last 30 years (as of 1996 the proportion was 9%). The Affirmative Action policy that was formulated by Government in 1998 set a target of 40% representation of women at all levels of governance, but it has lacked the necessary legal 'force'. The Affirmative Action Bill was subsequently drafted to promote gender equality at all levels of governance and redress the imbalance in society, but it is yet to be passed into law. Strong political will is needed for this.

I.3 Gender Statistics in Ghana

The availability and use of quality sex-disaggregated data and statistics is critical in tracking progress on gender equality, analysing the situation of women and girls, and informing advocacy, policy planning and implementation. Findings of an Assessment of Gender Statistics at National and District Levels in 2017 observed gaps in most of the operational areas across institutions and sectors; identifying that the National Statistical System (NSS) including the Research, Statistics and Information Management Directorates/Units of most Ministries, Departments and Agencies make limited consideration of gender in the production and utilization of statistics for development. The institutional gaps are attributed to the lack of universal methodology, know-how, and limited understanding of the added value of having rich gender statistics. In addition, the gender statistics collected by the GSS is collected in various surveys, with no periodic comprehensive report on the general outlook of gender statistics and the gaps.

I.4 In health

The main indicators are the following (2017): (i) the maternal mortality ratio was estimated at 310 maternal deaths per 100,000 live births; (ii)infant and under-5 mortality rates in the5-year were 37 and 52 deaths per 1,000 live births, respectively; (iii) the total fertility rate in Ghana in 2017 is 3.9 children per woman in 2014 and 14% of women age15-19 have begun childbearing; and (iv) one in four married women age15-49 use a modern method of contraception (25%).

Despite Ghana being food sufficient, the primary diets are carbohydrate heavy. The UN reports that one of every five children is stunted and two of every three children have anaemia, which results in part from micronutrient deficiencies. Rates of undernutrition and anaemia are highest in the northern region with stunting at 33% and anaemia in children at 79%. National rates of anaemia in adolescent girls and women of reproductive age are 48 and 42 per cent respectively, with higher rates in rural areas.

I.5 Access to water and sanitation

Nearly 9 in 10 households (89%) have access to an improved source of drinking water and eight in 10 households (82%) have unimproved toilet facilities.

I.6 Education

The literacy rate for women has increased considerably from 66% in 2000 to 83.23% in 2010 according to UNESCO. There are however great disparities across the regions in Ghana. Female adult literacy rates in the Northern Region and the Upper West Regions stand at 30.4% and 39.9% respectively, while that in greater Accra stood at 85.3%. There has been a marginal improvement in school enrolment rates for girls at all levels. Gender parity has now been reached in primary education and junior high school but at senior high school and TVET education, it is still yet to be achieved. While access to formal education has increased in Ghana, the quality of education remains a problem. Transition from school into productive jobs is too slow, especially for women who bear the burden of family duties. The incomplete transition of girls into working life is related to early pregnancies and family formation, especially in rural areas, and particularly for girls from low- income families.

According to the 2015 Ghana Labour Force Survey, 1.7% of young men (15-35 years old) are apprentices, compared with 1% of young women. The EU reports that a “gender segregation” is noticed in the main trades learnt from apprenticeship training, reproducing a gender division of labour in trade areas: girls and women (11 years and older) are concentrated in two kinds of trades: textile, apparel and furnishing (54%) and personal/ground services (36%),

while boys and men are concentrated in building (29%), transportation and material moving (19%), automotive (14%) and textile, apparel and furnishing (14%). In addition, fewer than 5% of those who undertake TVET in 'male-dominated' areas such as Electrical, Mechanical, and Building are women, while areas such as Hospitality, Tourism, Business and Secretarial contain relatively few men. The dearth of women studying in these fields has the predictable knock-on effect of limiting the number of women who ultimately teach in these areas. This contributes to a self- perpetuating cycle that limits girls' access to role models who might otherwise inspire and guide them to study in less traditional but potentially more lucrative fields. In 2011/12, there were approximately four male teachers in TVET institutions for every woman teacher.

I.7. Participation in the economy

Women have less access to productive jobs than men do. First, women are more likely to be inactive than men, largely because of family or household responsibilities that claim much of their time (when these unremunerated activities are counted as "work," women work more hours than men). A recent time use survey by the World Bank indicates that adult women are in charge of fetching water and firewood in 70 percent and 60 percent of Ghana's households, respectively. On average, women spend more than three times as many hours a week on domestic work than men (39.5 hours compared to 11.3 hours respectively), yet women spend virtually the same amount of time as men on productive work (43 hours per week and 45 hours per week respectively)[1].

Figure 1: Rice Processing Company in Ghana with Women as Predominant Labour Force

I.8 Employment

Women dominate Ghana's large sector of self-employment outside of farm activities. This self-employment is mostly in the informal sector, where they benefit little from the benefits of existing labour laws as shown in Table 2. Less than 10 percent of women work in wage jobs, compared to one-third of men. Whether as self-employed or wage workers, women tend to work in less productive activities and earn less than men across different levels of education. There is gender division of labour in employment in different sectors as evidenced by the following: there are more males (45%) than females (31%) in Agriculture, forestry and fishing industry. The reverse is the case for Wholesale and Retail Trade (29% females and 12% males) and Manufacturing industry (18% females and 9% males). This gender division

of labour is different for urban and rural areas: in urban areas, women employed in the informal sector in wholesale and retail trade are the double than men (40,5% compared with 19,5% of men); on the contrary, urban men are almost the double of women in agriculture, forestry and fishing industry (16% and 8,9%). The "gender division of labour" is also reproduced in female and male membership of Trade Associations, where women are a little minority in all trade associations except for traditionally "female" trades, such as garment and cosmetology. With regards to the access to the highest qualified occupations and leadership positions, the proportion of professionals is 6.6% for males and 3.4% for females, and those of technician and associate professionals is respectively 3,0% and 0,7%. Only 15% of firms include women in top management and there is only one woman out of five members of research and development staff.

Figure 2: Women Engaged in Agriculture in the Savannah Zone (Maize Processing)

I.9 Vulnerability in Urban Versus Rural Areas

Women in rural areas have higher incidence of poverty than their counterparts in urban areas. Rural areas continue to have a much higher average rate of poverty than those in urban areas (37.9% versus 10.6%). At the regional level, the Northern, Upper East, and Upper West regions continue to have the highest poverty rates. Rural poverty is now almost 4 times as high as urban poverty compared to twice as high in the 1990s. Gender inequality hinders poverty reduction and endangers the prospects of economic and human development. Data from the World Bank shows that 84% of the Ghanaian active female population are engaged in vulnerable employment, meaning unpaid family work or own account work (MoGCSP, 2015). There is better access for urban women than rural women to non-agriculture wage employment with 31.4% of urban non-agriculture wage employees being women compared to 27.1% in rural areas. The trend is better for those with secondary education, which indicates the potential that access to secondary education has to improve access to non-agriculture wage employment, improve income levels and promote empowerment.

I.10 Entrepreneurship

Women are mostly involved in self-employment in informal businesses in the textile, garment and beauty industries. The European Union reports that Household enterprises (HHEs) are the major source of employment in Ghana, engaging 3.6 million households (43% of all households in the country) that run a microenterprise. The majority of HHEs (54%) engage in

wholesale and retail trading activities, but also catering and lodging, food services (making and selling snacks or meals), transport, and personal services such as barbering and hairdressing. In Ghana, women run 70% of household enterprises (HHE). Women face higher constraints than men to expand their HHEs. They are more likely to operate and remain operating one- or two-person enterprises sometimes for years, with no prospect (and intention) to grow. The main challenges that these women face include lack of skills in business management and entrepreneurship, access to finance and assets to grow their working capital, poor quality of products, lack of standardization and poor branding of products. The biggest barrier to access to finance for women is due to lack of collateral. In the northern region, men dominate control of household assets including those owned by women. The Institute of Economic Affairs reports that men have absolute control over land (87.7%), motorbike (86.3%), residential buildings (81.4%) and farmland (67.5%).

Figure 3: Example of Women-led Farmer Based Organizations (FBAs) in Ghana

I.11. Trade

Women tend to be over-proportionately represented in informal cross border trade as a means of earning an income and sustaining their families. A majority of women tend to use the income earned from such trade to meet basic household needs, particularly for food, rent, school fees and healthcare needs. There is also a gendered dimension on goods traded through informal cross border trade and this varies from country and region. Women are more vulnerable to exploitation, sexual harassment and sexual violence when it comes to cross border trade and usually need more security and information on taxes and their legal rights to trade and move.

II. GENDER ANALYSIS OF CLIMATE SENSITIVE AGRICULTURAL SECTOR AND ACCESS TO FINANCE

II.1 Gender analysis of agriculture value chain in Ghana

The Government of Ghana has made progress and strong political commitment to gender Equality. For example, the 1992 Constitution of the Republic of Ghana makes clear provision for improving the legal frameworks for promoting gender equality and women's empowerment. Other national laws have also made provision for the domestication of various

international conventions, protocols and agreements on gender equality and women's empowerment in Ghana. For instance, in the Agriculture sector, to ensure gender mainstreaming, the Government of Ghana **has elaborated the Gender and Agricultural Development Strategy (GADS I)** in 2001 and GADS II, in 2015 to address the gender inequities in the agricultural sector, and empowering women involved in the agricultural value chain. The GADS provided the framework for achieving a gender-sensitive, equitable and efficient agricultural sector, but still efforts need to be done for ensuring the real gender mainstreaming in the sector. The Government has also created the **Women in Agricultural Development Directorate (WIAD),** as one of the seven Technical Directorates of the Ministry of Food and Agriculture (MOFA).The WIAD is responsible for Policy formulation – developing and ensuring the implementation of policies which are beneficial to especially women farmers and processors in the rural, suburban and urban communities.

In Ghana, women constitute 52% of the national Agricultural labour force, contributing over 46% to the total GDP and also producing more than 70% of all subsistence crops in the country (MOFA, 2002). Women play a major role in agriculture: farming and food processing. Women are involved in the agricultural processing and contribute more than 70% of agriculture transformation. Also, about 70% of the labour force in agricultural activities is carried out by women. Women are engaged in planting, weeding, harvesting, processing and marketing of agricultural produce in most regions across the country as exemplified in figure 4. Women guarantee livelihoods, especially in rural areas. As a result of their great efforts in agriculture, women's production helps to guarantee their self-sustenance. However, women continue to face persistent gender inequalities that limit their full participation in the nation's development. Women are disadvantaged compared to men in terms of access and control over land and along the value chain of agriculture.

Figure 4: Women Engaged in Shea processing in the Savannah Zone

Socio-cultural practices that assign and confine women, especially rural women, to be responsible for triple role (production, reproduction and community role), limit the participation of women in decision-making processes and their exposure to other economic opportunities. In many areas, the role of women in agriculture is considered just to be a "*support*" given to their husbands and not as an important economic contribution to the agricultural production.

II. 2. Gender analysis of agricultural finance in Ghana

Women play a major role in the agriculture value chain, from farming to food processing and marketing. However, women face obstacles to access funding for agribusinesses due to the limited access to and ownership of land, as an essential collateral, limited knowledge and capacity in elaborating bankable business plans, limited access to information on how and where to access finance, lack of guarantee for climate change related risks, mindsets about the agriculture; considered as for households needs; etc.

Access to credit and other financial services is a serious constraint to many actors in the agriculture sector especially the smallholder farmers, who are mostly women, for whom funding from the banks is simply out of reach.

According to the Ghana National Institute of Statistics[1], women have limited access to bank's account, compared to men, especially in rural areas. Only 30.8% of women compared to 69.2% of men have an individual saving account. Furthermore, the main source of financing for women in agriculture comes from the traditional Susu Scheme (71.6%) compared to their male counterparts (28.4%). With respect formal credit channels such as Banks, less that 43.9% of women have access to formal credit facilities.

Regarding the purpose of loan, the overall percentage of credit from the Financial Institutions for agriculture's sector is less than 4%. With only 13.7% targeting women lending for land, 27.9% for agriculture's equipment's to women and less than 23.5% lending to women for agriculture's inputs. In addition to this, women received the largest number of loans refusal with urban/rural disparities of 61.3% to 65.9% respectively. This is attributed to the lack of collateral and also due to the limited capacity in producing high quality proposals. Female-led agribusinesses women exhibit weak financial record of accomplishment and knowledge gaps that negatively affect their ability to prepare bankable business plans.

III. IMPACT OF WOMEN'S ACCESS TO FINANCE FOR THE CLIMATE RESILIENCE AGRICULTURE PURPOSES

Women play a large number of roles in the agriculture sector, along the value chain. Women play significant roles in production and post-harvest processing that are often key determinants of the size and quality of the final commodities produced. In general, access to credit affects household welfare. Better access to credit reduces household consumption volatility, improves investment opportunities, eases the constraints on small and family businesses, and diversifies household and financial sector assets. Women's activities have the potential to grow and become even more significant with access to knowledge, credit and relieving time constraints.

If women had the same access to productive resources as men, they could increase yields on their farms by 20–30%. This could raise total agricultural output in developing countries by 2.5–4.0% (FAO, The State of Food and Agriculture 2010–11). However, gaps between men and women in ownership and control of physical assets plus gaps in human capital, influence women's ability to access finances.

IV. CHALLENGES OF WOMEN'S ACCESS TO FINANCING FOR AGRICULTURE

[1] National Institute of Statistics, Women and men in Ghana, a Statistical compendium 2014, Ghana Statistics services, Accra, 2014

Property rights and control over assets: women are less likely to have land and other assets like houses, titled under their name, which in most cases is used as collateral. This is a big challenge for them to apply and receive the loan without collateral.

Lack of awareness of finance: Women generally lack knowledge on the financial options available to them. Furthermore, the cost of getting this information (measured in money, time, and energy) may be high due to family responsibilities.

Cultural norms and family responsibilities: Socially accepted norms and expected family roles have a profound effect on the type of economic activities that women can engage in. Women are most likely to engage in subsistence agriculture, just for households needs on a daily basis. The crops they are involved in within the households demonstrate this. In Ghana, cash and export crops are frequently regarded as "men's crops" and subsistence crops as "women's crops". The standard explanation for this division of labour is that women are responsible for feeding the family and thus prefer to grow subsistence crops for the household, whereas men are responsible for providing cash income and thus raise cash and export crops.

Limited capacity of women to develop qualified proposals: women compared to men have a high level of illiteracy (35% for women compared to 22% for men)[2]. In addition, women have limited access to information and knowledge sharing to boost their capacity to elaborate and submit eligible proposals to financial institutions.

Biased attitude of Banks: Women's access to financial resources is also limited by biased lending practices that emerge when financial institutions consider them inexperienced and therefore less attractive clients, or when institutions lack the knowledge to offer products tailored to women's preferences and constraints.

[2]Idem

V. PROPOSED GENDER ACTION PLAN

Activities	Indicators and Targets	Timeline	Responsibilities	Costs in USD
Impact Statement: Improved living conditions of families and women in particular, especially those in rural areas involved in agriculture sector **Outcome Statement: Improved business opportunities for women involved in climate resilient agricultural production and transformation**				
Output(s) Statement: 1. Increased access of women to and control over land and agricultural products				
Activities	**Indicators & Targets**	**Timeline**	**Responsible**	
1. Organise the sensitizations campaigns on women & girls' rights to access to and control over land	Number of ministries, departments and agencies (MDAs), local authorities and institutions reached by the campaign; target is to reach out to at least 50 key stakeholders in different MDAs and local authorities and institutions	By 5 year	Selected CSO partner in close coordination with Ministry of Gender, Children and Social Protection (MoGCSP)	Covered under TA budget for regulatory strengthening
2. Training of female trainers (ToTs) to formalise women-led MSMEs and FBAs to facilitate a collective access to land and access to finance for climate resilient agricultural practices	Number of female trainers trained: Target – 50ToTs	By 5 years	Selected partner for implementing activity	Covered under TA budget for CRA adoption practices and technology uptake
3. Strengthening of regulatory framework for co-land registration and land titles in the names of both partners	Number of female land reform legislators trained: Target is to train at least 50 female land reform legislators. At least 10 per year in each training workshop	By year 5	Legislative assembly	Covered under TA budget for regulatory strengthening
4. Support women's access to agricultural technology from agricultural production to transformation	Number of women using technology, Target: 400 women-led MSMEs/FBAs.	By 5 year	Selected CSO partner	Budgeted for in the LoC Component
5. Provide processing equipment, packaging equipment and storage facilities to women-led MSMEs	Number of women-led MSMEsand FBAs beneficiaries of equipment's: Targets : 400 Women-led MSMEs and FBAs	By year 5	Selected CSO partner in close coordination with Ministry of Gender, Children and Social Protection	Budgeted for in the LoC Component

			(MoGCSP)	
6. Capacity-building of gender-desks, Ministry of Food and Agriculture and The Ministry of Gender	Number of Staff in the ministry trained on gender issues: Target: 50 staff trained on gender issues such as gender budgeting	By Year 5	Selected CSO Partner	Covered under TA budget for regulatory strengthening
Output 2: Increased number of women-led MSMEs and FBAs in agricultural value chain				
Activities			Selected CSO partner	Covered under TA budget for FIs & MSMEs/FBAs support for programme implementation
1. Sensitization of women in informal business on the benefits of SME registration	Number of additional women in informal agric-business ventures sensitized on benefits of SME registration. Target: 50 additional women in informal agric-business ventures sensitized	By 5 year		
2. Organisation of training for women in the elaboration of bankable proposals.	Number of women trained in proposal development. Target: 400 women-led MSMEs and FBAs trained in the elaboration of bankable proposals	By 5 year	Selected CSO partner	Covered under TA budget for FIs & MSMEs/FBAs supportfor programme implementation
3. Sensitize the FI on Consulting and proposing the financial products adapted to the needs and living conditions of women	Number of FIs staff sensitised on proposing specific financial products for women; Target: 20 FI staff sensitised	By 5 year	Selected Implementing partner	Covered under TA budget for FIs & MSMEs/FBAs support for programme implementation
4.Sensitize and support women-led MSMEs to enrollment in the index-based agricultural insurance schemes;	Number of women-led MSMEs sensitized to enroll in the GIRSAL index-based agricultural schemes. Target: 400 women-led MSMEs/FBAs	By 5year	Selected Implementing partner	Covered under TA budget for CRA adoption practices and technology uptake
5. Sensitize and Award Financial institutions to commit to lending to women-led SMEs			Bank of Ghana &	Covered under TA budget for CRA adoption practices and technology

	Number of FIs sensitized and awarded for lending to women-led SME. Target: 50 sensitized; top 3 awarded (Award to Tbd)	By 5 year	African development bank	uptake
Output 3: Increased climate resilience agricultural adoption practices and use among women-led MSMEs				
Activities				Covered under TA budget for CRA adoption practices and technology uptake
1. Sensitize women-led MSMEs to adopt and use climate resilience agricultural practices in their areas	Number of women-led MSMEs adopting and using resilience agricultural practices Target: 400 women-led MSMEs and FBAs sensitized	By 5 year	Selected CSO partner	Covered under TA budget for CRA adoption practices and technology uptake
2. Connect women farmers to information regarding weather, markets and finance by providing them with an overview of the agricultural value chain	Number of women farmers connected to information on weather, market and finance; Target: 400 women-led MSMEs/FBAs connected	By 5 year	Selected Implementing partner	Covered under TA budget for CRA adoption practices and technology uptake
3. Support green growth initiatives of women across the entire agricultural value chain	Number of women supported Target: 400 women-led MSMEs/FBAs	By 5 year	Selected Implementing partner	Covered under TA budget for CRA adoption practices and technology uptake
4. Training of women-led agribusiness enterprises to shift to agricultural value chains that are better aligned with a changing climate.	Number of women-led agribusiness aligned with a changing climate. Target: 400 women-led MSMEs/FBAs	By 5year	Selected Implementing partner	